following areas: cardiovascular, digestive and urinary systems balance and stress; metabolism; human inheritance. (S/U only.)

**HES 3140 HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: CHILDREN** (3)
PR: Admission to the Health Education Program or CI. Programs, curriculum, health services, and health education related to health needs and interests of children. (S/U only.)

**HES 3141 HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: PUBESCENCE** (3)
PR: Admission to the Health Education Program or CI. Programs, curriculum, health services, and health education related to health needs and interest of pubescence. (S/U only.)

**HES 3244 HEALTH COUNSELING** (3)
PR: Admission to the Health Education Program or CI. A study and application of theory and methods of health counseling. (S/U only.)

**HES 3300 PROCESSES AND PROGRAMS IN HEALTH EDUCATION** (2)
PR: Admission to the Health Education Program or CI. Survey of programs in Health Education in the schools and community. Processes in programs and curriculum development will also be emphasized. (S/U only.)

**HES 3510 CONSUMER HEALTH** (3)
PR: Admission to the Health Education Program or CI. An investigation of advertising and consumer practices in relation to health care. (S/U only.)

**HES 3730 HEALTH ASSESSMENT LABORATORY** (2)
PR: Admission to the program or CI. Observation, screening and assessment of common health problems and introduction to resources for health education. Lec.-lab. (S/U only.)

**HES 4142 HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: ADOLESCENTS AND YOUNG ADULTS** (3)
PR: Admission to the Health Education Program or CI. A study of health needs, programs, services, and health content areas of adolescents and young adults. (S/U only.)

**HES 4143 HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: ADULTS** (3)
PR: Admission to the Health Education Program or CI. A study of health needs, services, and health education programs focusing on adults, including the aging. (S/U only.)

**HES 4276 HEALTH CARE DELIVERY SYSTEMS** (3)
PR: Admission to the Health Education Program or CI. An investigative study and evaluation of health care delivery systems in the U.S. and other countries. (S/U only.)

**HES 4722 CURRENT PROBLEMS IN HEALTH** (3)
PR: Admission to the Health Education Program or CI. An investigation of current health problems, programs, and research methods. (S/U only.)

**HES 4905 INDEPENDENT STUDY: HEALTH EDUCATION** (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

**HES 4909 DIRECTED STUDY: HEALTH EDUCATION** (1-3)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class. (S/U only.)

**HES 4940L INTERNSHIP IN HEALTH EDUCATION** (1-12)
PR: Admission to the Health Education Program. Supervised internship in the schools with scheduled seminars. (S/U only.)

**HES 4943 SEMINAR AND FIELD EXPERIENCE: ADULT HEALTH** (4)
PR: Admission to the Health Education Program. Supervised field experiences in adult health programs in schools and the community. (S/U only.)

**HES 4944 SEMINAR AND FIELD EXPERIENCE: CURRENT HEALTH PROBLEMS** (4)
PR: Admission to the Health Education Program. Supervised field experience in selected health program. (S/U only.)

**GRADUATE COURSES**

**HES 5328C HEALTH PROBLEMS OF SCHOOL AGE POPULATION** (3)
A study of health problems and needs of school age students including a health status screening laboratory.

**HIGHER EDUCATION**

**GRADUATE COURSES**

**EDH 6061 THE JUNIOR COLLEGE IN AMERICAN HIGHER EDUCATION** (3)
History of higher education, philosophical and cultural bases for definition of its role, and contemporary issues, such as control, financing, and curricular patterns. The place and problems of the community junior college will be central concerns of this course.

**EDH 6938 SEMINAR IN COLLEGE TEACHING** (3)
Implications of learning theory and student characteristics for teaching at the college level. Types of teaching procedures, innovation, evaluation, student freedom and responsibility for learning.

**HUMANITIES EDUCATION**

**UNDERGRADUATE COURSES**

**HUM 4870 CURRENT TRENDS IN THE TEACHING OF HUMANITIES** (3)
Curricular patterns, materials, and instructional practices in the teaching of humanities.

**HUM 4909 DIRECTED STUDY: HUMANITIES EDUCATION** (1-3)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

**HUM 4936 SENIOR SEMINAR IN HUMANITIES EDUCATION** (2)

**HUM 4940 INTERNSHIP HUMANITIES EDUCATION** (1-12)
One full semester of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more semesters, students will be registered for credit which accumulates from 9 to 12 semester hours. (S/U only.)

**INDUSTRIAL/TECHNICAL EDUCATION**

**UNDERGRADUATE COURSES**

**EIV 4314 METHODS OF TEACHING: DIVERSIFIED COOPERATIVE TRAINING** (3)
Methods, techniques, and materials for instruction. This course specializes in Diversified Cooperative Training.

**EVT 3663 THE TEACHER IN THE WORLD OF WORK** (3)
A study of educational efforts in preparing people for work, the relationship of a job to a man's life style, and the concept of education as a life-long process.

**EVT 4661C TEACHING IN INDUSTRIAL-TECHNICAL EDUCATION** (1-3)
Designed to give the preservice or inservice industrial education instructor an orientation to teaching in Industrial-Technical Education programs. Included is the instructor's roles and responsibilities concerning students, the school and the community, the organization of vocational education in Florida, school and district rules, teacher liability, school laws and professionalism. Open to majors and non-majors. May be repeated up to a total of three credit hours.
EVT 4065 PRINCIPLES OF ADULT AND VOCATIONAL EDUCATION (3)
An overview of current policies and principles to include their historical, sociological, and philosophical bases out of which principles of adult and vocational education have been accepted and implemented.

EVT 4084C PROFESSIONAL DEVELOPMENT IN INDUSTRIAL TECHNICAL EDUCATION (1-3)
Designed to aid the Industrial-Technical Education instructor in developing and carrying out a plan for personal professional development. Competencies include keeping up to date in the teaching profession, maintaining technical competence, displaying a professional philosophy on the job, serving the school and community and others. Open to majors and nonmajors. May be repeated up to a total of 4 credit hours.

EVT 4263 ORGANIZATION AND MANAGEMENT OF STUDENT VOCATIONAL ORGANIZATIONS (3)
Designed to give the preservice or inservice vocational instructor an understanding of the rationale for and the role of the student vocational organization. The course aids the instructor in mastering specific professional competencies needed to organize, establish, administer and evaluate the student vocational organization as an integral part of the vocational education program in industrial, business, distributive, cooperative and other program areas.

EVT 4364 METHODS OF TEACHING VOCATIONAL EDUCATION (3)
Methods, techniques, and materials for instruction.

EVT 4365 SPECIAL TEACHING METHODS: INDUSTRIAL-TECHNICAL EDUCATION (4)
Methods, techniques, and materials for skill development.

EVT 4367 ASSESSING STUDENT SKILL IN VOCATIONAL EDUCATION (3)
Designed to give the participant an understanding of the importance of assessing student's mastery of skills in industrial-technical education. Emphasis is placed on student skill assessment in performance based programs utilizing the criterion-referenced testing approach. The course focuses on specific competencies in several areas including developing and administering performance tests, monitoring student progress, and others.

EVT 4540 READING SKILLS IN ADULT AND VOCATIONAL EDUCATION (2)
PR: RED 4360, or CR in RED 4360. Students will study reading and communication skills as they relate to their particular content areas in Adult and Vocational-Technical Education. This course, along with RED 4360, satisfies State certification requirement pertaining to secondary reading.

EVT 4815 FACILITY DESIGN AND MANAGEMENT (3)
Design and develop instructional facility floor plans consistent with modern and efficient methods of instruction as well as evaluate existing classrooms, laboratories, and shops. Selection and location of equipment. Review and prepare operational plans for the management of equipment, furniture, tools, and supplies as they relate to effective student learning.

EVT 4905 INDEPENDENT STUDY: INDUSTRIAL-TECHNICAL EDUCATION (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

EVT 4906 DIRECTED STUDY: INDUSTRIAL-TECHNICAL EDUCATION (1-3)
PR: Senior-standing. To extend competency in teaching field. Offered only as a scheduled class.

EVT 4936 SENIOR SEMINAR IN INDUSTRIAL-TECHNICAL EDUCATION (2)

EVT 4940 INTERNSHIP: INDUSTRIAL-TECHNICAL EDUCATION (1-12)
One full semester of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more semesters, students will be registered for credit which accumulates from 9 to 12 semester hours. (S/U only.)

EVT 4945 SUPERVISED FIELD EXPERIENCE: BUSINESS EDUCATION (1-6)
PR: CI. Planned supervised functions in the area of specialization and co-ordinated with selected schools, government, offices, social agencies, businesses and industries on site.

EVT 4946 SUPERVISED FIELD EXPERIENCE: INDUSTRIAL-TECHNICAL EDUCATION (1-6)
PR: CI. Planned supervised functions in the area of specialization and co-ordinated with selected schools, government offices, social agencies, businesses and industries on site.

GRADUATE COURSES

EIV 5315 PROGRAM MANAGEMENT: DIVERSIFIED COOPERATIVE TRAINING (3)
Organization, coordination, and budgeting of adult, cooperative, and special programs.

EVT 5176 CURRICULUM CONSTRUCTION: INDUSTRIAL-TECHNICAL EDUCATION (3)
Curriculum scope, the process of planning and organizing instructional programs with emphasis on task analysis and program evaluation.

EVT 5190 SCHOOL-COMMUNITY DEVELOPMENT (3)
An approach to identifying, assessing, and analyzing individual, institutional, and community needs, for the purpose of cooperative program planning, community involvement, and public support.

EVT 5280 OCCUPATIONAL SAFETY AND HEALTH (OSHA) (3)
Planning and organizing safety and health course content to be included in occupational education programs in Florida. Content to be identified in and selected from Federal Registers, Department of Labor, Occupational Safety and Health Standards.

EVT 5366 PREPARATION AND DEVELOPMENT FOR TEACHING (3)
The development of selected instructional materials, use of new educational media, performance evaluation instruments, and counseling techniques.

EVT 5817 PROGRAM MANAGEMENT: INDUSTRIAL-TECHNICAL EDUCATION (3)
Organization, coordination, and budgeting of adult, cooperative, and special programs.

EVT 6191 PLACEMENT OF SEVERELY HANDICAPPED PEOPLE (3)
A study of the purposes, methods, processes and procedures used to plan, implement and operate a Vocational Rehabilitation Cooperative School Counseling Program.

EVT 6300 INDIVIDUALIZED INSTRUCTION (3)
Attention is given to individualized instruction to include the special needs student, the slow learner, and the more capable student.

EVT 6385 ADMINISTRATION OF LOCAL PROGRAMS: VOCATIONAL EDUCATION (4)
A study of the organization, selection of personnel, assignment of duties and responsibilities, and establishment of policies and procedures to accomplish the objectives of the local program within the federal, state, and local requirements.

EVT 6386 SUPERVISION OF LOCAL PROGRAMS: VOCATIONAL EDUCATION (3)
PR: CI. A study of the factors involved in the supervision of instruction including plans for teacher education, improvement of instruction, coordination of activities, and personnel relations.

EVT 6563 CURRENT TRENDS (3)
Historical information, issues, current trends, new dimensions and problems in the area of specialization.

EVT 6769 METHODS, PROCEDURES, AND PROCESSES OF VOCATIONAL EVALUATION (3)
A study of the purposes, methods, processes and procedures used to plan, implement and operate a vocational evaluation program.
EVT 6926 STAFF DEVELOPMENT (1-5)
Implementation of new procedures addressed to discreet developmental needs of the staff as identified by an educational agency.

EVT 6930 SEMINAR (3)
PR: EVT 6431 and EVT 6481. Applied research techniques and investigation of important current issues of theses in the area of specialization.

EVT 6948 PRACTICUM: INDUSTRIAL-TECHNICAL EDUCATION (3-6)
A problem-centered field study in the local community, school, government, office, social agency, business or industry.

EVT 7066 FOUNDATIONS AND PHILOSOPHY OF VOCATIONAL, TECHNICAL, AND ADULT EDUCATION (3)
PR: Preliminary admission to the advanced graduate program and/or Cl. This course focuses on the historical development and contemporary philosophies, cultural bases and practices of Vocational, Technical and Adult Education.

EVT 7155 CAREER DEVELOPMENT IN VOCATIONAL, TECHNICAL, AND ADULT EDUCATION (3)
PR: Preliminary admission to the Graduate Program and CI. The course involves the development of a career model. The model will be designed to facilitate career development of students, articulate vocational education and career guidance; integrate the world of work with the world of education and involve students in the dissemination of career information and in the facilitation of career development.

EVT 7164 VOCATIONAL AND ADULT EDUCATION PROGRAM PLANNING AND IMPLEMENTATION (3)
PR: EVT 5176. Curriculum Construction, or equivalent. Designed to equip students with the knowledge and skills necessary to participate in the initial determination, planning, organization, and implementation of new or expanded vocational and technical education programs.

EVT 7168 INSTRUCTIONAL DEVELOPMENT FOR VOCATIONAL, TECHNICAL, AND ADULT EDUCATION (3)
PR: EDG 5206 or CI. The course is designed to develop competencies in a systematic approach to vocational, technical, and adult education curriculum improvement and instructional development. Students will apply an instructional systems approach to the development of practical solutions to critical teaching and learning problems.

EVT 7760 RESEARCH SEMINAR IN VOCATIONAL, TECHNICAL, AND ADULT EDUCATION (3)
PR: Completion of program requirements in measurement and research or CI. Examination and critical evaluation of research in a particular specialization area of Vocational, Technical, or Adult Education. Preparation of an individual research prospectus. Available to majors only. Repeatable up to six credit hours.

LIS 4505 AUDIOVISUAL EQUIPMENT AND MATERIALS (2)
PR: Upper level standing or CI. Provides basic skills in selecting, presenting, and evaluating audiovisual programming in accord with Florida Essential Generic Competencies Ten and Twelve, as follows: (10) Select, adapt, and/or develop instructional materials for a given set of instructional objectives and student learning needs; and (12) Establish rapport with students in the classroom by using verbal and/or visual motivational devices.

GRADUATE COURSES
COP 6242 COMPUTER PROGRAMMING FOR LIBRARIES AND INFORMATION CENTERS (3)
Programming of library-oriented computer applications using the PL/C programming language. Emphasis on programming of library technical services operations and information retrieval and dissemination systems.

LIS 5315 INSTRUCTIONAL GRAPHICS (3)
PR: Cl. Theoretical aspects, planning and production of instructional graphic material. The theory of graphic communications. Interpreting needs for instructional materials appropriate for given behavioral objectives.

LIS 5321 PREPARING SINGLE CONCEPT FILMS (3)
PR: CI. Techniques and procedures in the preparation of educational films. Ascertaining concepts, script writing, graphics, lighting, filming, editing.

LIS 5333 TV IN SCHOOL AND LIBRARIES (3)
S all format video tape recordings and the utilization of open and closed broadcasts in schools and libraries.

LIS 5404 FOUNDATIONS OF LIBRARIANSHIP (3)
Overview of and introduction to the study of library service; history; organizing specialized literature; outstanding leaders; current trends, issues, and problems. Place of the library in society with its contributions to that society.

LIS 6110 HISTORY OF LIBRARIES (3)
Development of libraries as found from the earliest records to the great libraries of modern times and the library as a social institution.

LIS 6111 HISTORY OF CHILDREN'S LITERATURE (3)
Historical bibliographical survey of imaginative and informational literature for children.

LIS 6119 CONTEMPORARY PUBLISHING AND PRINTING (3)
PR: LIS 6520. A survey of book publishing as it is carried on today, primarily in the United States. Emphasis on structure of the industry, economic conditions, technological developments, social functions of book publishing and distribution. Complementary relations between libraries and publishing.

LIS 6203 READING GUIDANCE PROGRAMS IN LIBRARIES AND CLASSROOMS (3)
Working with factors and forces influencing reading habits of children and youth; programs for teaching investigative and library skills; materials and methods for guidance of reading, listening and viewing.

LIS 6206 ADULT SERVICES IN LIBRARIES (3)
PR: LIS 6520 or CI. Consideration of traditional and innovative services for adults in libraries with emphasis on public libraries and institutional libraries. Study of library community analysis and methods of planning and evaluation of groups, such as the aging, the institutionalized, the handicapped, students and faculty, and users of information about business and labor.

LIS 6225 STORYTELLING (3)
PR: Cl or LIS 6586. Building-storytelling programs for schools and public libraries or other educational institutions. Analysis of historical aspects, material suitable for use and audience reaction.

LIS 6260 INFORMATION SCIENCE IN LIBRARIANSHIP (3)
Historical overview of the emergence of information science as a discipline. The fundamental concepts of information retrieval systems and subsystems, related information technologies, and their applications to the field of librarianship.
LIS 6262 LIBRARY SYSTEMS PLANNING (3)
Application of systems planning and data processing technology to library files. Emphasis on analysis of selected library subsystems.

LIS 6271 RESEARCH METHODS IN LIBRARIANSHIP (3)
Overview of present status of research in library and information science; introduction to research methods and their application to librarianship. Designed to prepare students to plan, conduct, and evaluate research relating to the acquisition, classification, cataloging, retrieval, and dissemination of information. Open to both majors and non-majors in library-audvisual education.

LIS 6312 PREPARING INSTRUCTIONAL MEDIA (3)
Fundamentals of preparing and using audiovisuas as they relate to the communication process.

LIS 6409 INTRODUCTION TO LIBRARY ADMINISTRATION (3)
Behavioral approach to planning, organizing, staffing and controlling libraries as organizations; identification of administrative principles, theories, and problems of all types of libraries; critical examination of methods of administration supporting library functions, programs, and services; fiscal and legal responsibilities of libraries.

LIS 6428 AUDIOVISUAL ADMINISTRATION (3)
PR: LIS 6312 and LIS 6508 or CI. Audiovisual administrative practices in school systems and junior colleges.

LIS 6432 SEMINAR IN ACADEMIC LIBRARIES (3)
PR: LIS 6409. Identification of problems and critical examination of methods in administrative areas of technical, student, and teaching staff services, fiscal and legal responsibilities, staff organization and supervision in academic libraries.

LIS 6445 SEMINAR IN PUBLIC LIBRARIES (3)
PR: LIS 6409. Identification of problems and critical examination of methods in administrative areas of technical, children, and adult services, fiscal, and legal responsibilities, staff organization and supervision in public libraries.

LIS 6455 THE ORGANIZATION AND ADMINISTRATION OF THE SCHOOL MEDIA CENTER (3)
PR: General Program Requirements of CI. Media quarters, facilities and equipment. Basic principles of organization and administration of media programs in elementary and secondary schools.

LIS 6463 LIBRARY NETWORKS AND SYSTEMS (3)
PR: LIS 6409 or LIS 6428 or LIS 6455. Development of library networks at the local, state, regional, and national levels with consideration of organization, administration, services, funding and legislation. Includes public library systems and networks, intrastate interlibrary cooperative networks, state library agencies and statewide library development; interstate cooperation, and the role of federal agencies in library development.

LIS 6472 SEMINAR IN SPECIAL LIBRARIES (3)
PR: LIS 6409. Identification of problems and critical examination of methods in administrative areas of technical and special service clientele; fiscal and legal responsibilities, staff organization and services in special libraries.

LIS 6473 LAW LIBRARIANSHIP (3)
PR: LIS 6608, LIS 6735, or CI. Course designed to give students an understanding of all aspects of law librarianship, including selection, acquisition, organization, and use of information resources of the law researcher. Emphasis on books, microforms, and computerized legal systems used for legal research, and on work products of lawyers.

LIS 6475 HEALTH SCIENCES LIBRARIANSHIP (3)
PR: LIS 6260, LIS 6409, LIS 6608, LIS 6735, or CC. All aspects of health science librarianship, including administration, acquisition, organization, and use of information resources for persons in the health fields such as physicians, medical students, nursing students, allied health personnel and students, and researchers. Field trip may be required.

LIS 6506 AUDIOVISUAL UTILIZATION (3)
Examination (and utilization) of non-print media. Characteristics of media equipment and paradigms of use.

LIS 6508 THE CURRICULUM AND INSTRUCTIONAL TECHNOLOGY (3)
Effective utilization of instructional materials as they relate to specific areas of the curriculum in elementary and high school programs.

LIS 6520 SELECTION OF LIBRARY MATERIALS (3)
Bibliographical sources, evaluative criteria for books and principles of book selection for libraries.

LIS 6572 BOOKS AND RELATED MATERIALS FOR YOUNG ADULTS (3)
Young adult materials for use in secondary school libraries, young adult sections of public libraries and other institutions serving youth. Equal emphasis upon 1) selection principles and bibliographical sources as well as upon 2) utilization in terms of service to the young adult.

LIS 6586 MATERIALS FOR CHILDREN (3)
Examination of materials for all institutions in which children are served: school media centers, public libraries, kindergartens, etc. Stress on selection aids, reviewing techniques, utilization.

LIS 6605 ADVANCED INFORMATION SOURCES AND SERVICES (3)
PR: LIS 6608. Reference materials in the humanities, social sciences, science and technology.

LIS 6608 BASIC INFORMATION SOURCES AND SERVICES (3)
An in-depth examination of the basic sources of information in the general library; discussion of bibliographical control of all communication media, with emphasis on those tools which are of most value to general reference services; and the provision of various types of reference services.

LIS 6609 AUTOMATED INFORMATION SOURCES AND SERVICES (3)
PR: Basic Information Sources and Services, Information Science in Librarianship or CI. Principles of on-line searching and characteristics of machine-readable bibliographic data bases. Includes two credit hours of laboratory providing hands-on searching experience. (S/U only.)

LIS 6610 INFORMATION SOURCES AND SERVICES IN THE HUMANITIES (3)
PR: LIS 6608 or CI. Detailed consideration of the bibliographical and reference materials in the humanities with training and practice in their use for solving problems arising in the reference service.

LIS 6620 INFORMATION SOURCES AND SERVICES IN THE SOCIAL SCIENCES (3)
PR: LIS 6608. Detailed consideration of the bibliographical and reference materials in the social sciences with training and practice in their use for solving problems arising in reference service.

LIS 6630 INFORMATION SOURCES AND SERVICES IN SCIENCE AND TECHNOLOGY (3)
PR: LIS 6608 or CI. Study of representative reference sources in pure and applied sciences with equal attention given to typical problems encountered in scientific and technological reference service.

LIS 6633 NON-TRADITIONAL SCIENTIFIC INFORMATION MANAGEMENT (3)
PR: LIS 6630 or CI. Explores alternatives to traditional systems of handling biological, pharmaceutical, medical, toxicological, environmental, as well as chemical information. Selected systems not based on words are studied. Topics include fragmentation schemes, connectivity tables, linear notations, and other new developments such as substructure searching, screening devices, direct input and composite systems.

LIS 6651 BOOKS AND RELATED MATERIALS OF LATIN AMERICAN COUNTRIES SUITABLE FOR CHILDREN AND YOUNG PEOPLE (3)
Bibliographic sources, aids and tools for the selection and utilization of Latin American books and related materials suitable for children and young people. Examination of representative materials in terms of the basic principles and criteria of selection for libraries.
LIS 6661 GOVERNMENT DOCUMENTS (3)
The nature of state, federal, United Nations, and international
documents, their reference and research value; the techniques of
acquisition, organization and reference use.

LIS 6724 CLASSIFICATION AND CATALOGING OF
SERIALS AND NON-BOOK MATERIALS (3)
PR: LIS 6735. Principles and practices in cataloging and
organizing serial publications and non-book materials.

LIS 6735 TECHNICAL SERVICES IN LIBRARIES (3)
Principles of general library practice in technical services
operations. Emphasis on descriptive cataloging and use of
unabridged Dewey Decimal Classification.

LIS 6875 ADVANCED CATALOGING (3)
PR: LIS 6735. Introduction to L.C. Classification System;
changing policies and procedures in cataloging; and analysis of
system.

LIS 6906 INDEPENDENT STUDY (var.)
PR: 12 hours earned in program and consent of advisor. (S/U
only.)

LIS 6946 SUPERVISED FIELD WORK (3)
PR: CI. A minimum of 80 hours of supervised experience in an
approved cooperating library, media center, or other approved
agency during the student's last quarter of semester. This
includes practice work, seminar sessions, individual conferences,
and a summary report interpreting and evaluating the field
experience.

MATHEMATICS EDUCATION

UNDERGRADUATE COURSES

CAP 4100 COMPUTING DEVICES IN THE EDUCATIONAL
PROCESS (3)
Characteristics of computing devices, flowcharting, program-
ing, classroom management techniques, teaching materials,
and applications will be discussed.

MAE 4320 TEACHING JUNIOR HIGH SCHOOL
MATHEMATICS (3)
PR: 18 semester hours of mathematics or CC. Techniques and
materials of instruction in junior high school mathematics.

MAE 4330 TEACHING SENIOR HIGH SCHOOL
MATHEMATICS (3)
PR: EDG 4200 or CR in EDG 4200 and admission to teacher
education program in mathematics. Techniques and materials of
instruction in secondary mathematics.

MAE 4885 READING THE LANGUAGE OF
MATHEMATICS (2)
PR: Reading in Secondary Content Areas, Teaching Senior
High School Mathematics, or CR in Teaching Senior High
School Mathematics. Methods of teaching students to read the
language of mathematics.

MAE 4905 INDEPENDENT STUDY: MATHEMATICS
EDUCATION (1-4)
PR: CI. Specialized independent study determined by the
student's needs and interests. May be repeated when subjects
vary. (S/U only.)

MAE 4909 DIRECTED STUDY: MATHEMATICS
EDUCATION (1-3)
PR: Senior standing. To extend competency in teaching field.
Offered only as a scheduled class.

MAE 4936 SENIOR SEMINAR IN MATHEMATICS
EDUCATION (2)
PR: Senior Standing Synthesis of teacher candidate's courses in
complete college program. Required concurrently with intern-
ship.

MAE 4940 INTERNSHIP: MATHEMATICS
EDUCATION (1-12)
Onfull semester of internship in a public or private school. Intern
takes Senior Seminar in Education concurrently. In special
programs where the intern experience is distributed over two or
more semesters, students will be registered for credit which
accumulates from 9 to 12 semester hours. (S/U only.)

GRADUATE COURSES

MAE 5636C THE UTILIZATION OF LABORATORY
TECHNIQUES IN THE TEACHING
OF MATHEMATICS (3)
PR: 12 semester hours of mathematics of CI. In this course
students will make an examination of a variety of sample
laboratory lessons along with methods for creating and
evaluating such lessons.

MAE 6136 CURRENT TRENDS IN SECONDARY
MATHEMATICS EDUCATION (3)
PR: MAE 4330 or CI. Curricular patterns and instructional
practices in secondary mathematics.

MAE 6337 TOPICS IN TEACHING ALGEBRA
(1-4)
PR: Undergraduate degree in mathematics or certification in
secondary school mathematics. Topics in algebra, philosophy,
new trends, and methods of teaching secondary school algebra.
May be repeated for a maximum of four hours.

MAE 6338 TOPICS IN TEACHING GEOMETRY
(1-4)
PR: Undergraduate degree in mathematics or certification in
secondary school mathematics. Topics in geometry, philosophy,
new trends, and methods of teaching secondary school geometry.
May be repeated for a maximum of four hours.

MAE 6356 TEACHING OF PRE-SECONDARY SCHOOL
MATHEMATICS (3)
PR: 12 semester hours of mathematics or CI. Development of
strategies and materials for teaching mathematical concepts and
skills appropriate to pre-secondary school years. May be
repeated for credit up to 9 hours.

MEASUREMENT-RESEARCH

UNDERGRADUATE COURSES

EDF 4400 ELEMENTARY DATA ANALYSIS (1)
PR: EDF 4430. The application of graphic and statistical
techniques to organize, simplify and summarize test perfor-
mance, survey data, questionnaires and similar measures.

EDF 4430 BASIC CONCEPTS OF EDUCATIONAL
MEASUREMENT (1)
An introduction to the basic concepts of measurement in
education, and the role of measurement in education.

EDF 4439 NON-COGNITIVE MEASURES IN
EDUCATION (1)
PR: EDF 4430. The development, validation and application of
instruments that can be used to measure performance, attitudes,
preferences, values and temperament.

EDF 4440 TEACHER MA GE TESTS: OBJECTIVE
EXAMS AND OTHER STRUCTURED RESPONSE
ASSESSMENTS (1)
PR: EDF 4430. The planning, design and development of
objective type tests for school courses. Emphasis will be on
writing of test items that measure knowledge and the complex
intellectual skills, and on procedures for evaluating the quality of
individual questions and tests as a whole.

EDF 4445 CRITERION REFERENCED TESTS (1)
PR: EDF 4430. Principles of criterion-referenced testing,
procedures for construction of criterion-referenced tests,
interpretation of results of criterion-referenced tests.

EDF 4446 ESSAY EXAMS AND OTHER
FREE-RESPONSE ASSESSMENT PROCEDURES (1)
PR: EDF 4430. Techniques of writing essay exams; techniques
for eliciting a sample of student's work and writing for
assessment purposes; appropriate use of unstructured tasks for
student assessment; scoring methods for unstructured response.

EDF 4446 ESSAY EXAMS AND OTHER FREE-
RESPONSE ASSESSMENT PROCEDURES (1)
PR: EDF 4430. Techniques of writing essay exams; techniques
for eliciting a sample of student's work and writing for
assessment purposes; appropriate use of unstructured tasks for
student assessment; scoring methods for unstructured response.
EDF 4447  STANDARDIZED TESTS  (1)
PR: EDF 4430, EDF 4400. The procedures for distribution, uniform administration and interpretation of results for various standardized, norm-referenced, group tests in schools. Aptitude, achievement and non-cognitive tests are included.

EDF 4487  ASSESSMENT OF CLASSROOM BEHAVIOR: STUDENT PERFORMANCE  (1)
PR: EDF 4430. The development of valid and reliable observational techniques and procedures to evaluate student's attainment of educational objectives.

GRADUATE COURSES

EDF 6431  FOUNDATIONS OF MEASUREMENT  (3)
Fundamental descriptive statistics, basic measurement concepts, role of measurement in education, construction of teacher-made tests and interpretation of standardized tests.

EDF 6481  FOUNDATIONS OF EDUCATIONAL RESEARCH  (3)
PR: EDF 6431. Major types of educational research, with emphasis upon understanding the experimental method.

EDF 7407  STATISTICAL ANALYSIS FOR EDUCATIONAL RESEARCH I  (3)
PR: CI. Theory of and application of descriptive statistical procedures to problems in educational research: symbolization of data and statistical operations; tabulation and depiction of data; measures of central tendency and variability. Introduction to probability: Binomial Distribution; the normal probability distribution. Inferential statistics theory and application: t tests; confidence interval estimation; introduction to analysis of variance theory. Coordinated use of computer as data processing resource.

EDF 7408  STATISTICAL ANALYSIS FOR EDUCATIONAL RESEARCH II  (3)
PR: EDF 7407 or CI. Theory and application of inferential statistical procedures to problems in educational research; one-way analysis of variance; factorial analysis of variance; and multiple comparison procedures. Simple regression and correlation, and appropriate tests of significance. Non-parametric statistical inference. Coordinated use of computer as a data processing resource.

EDF 7409  STATISTICAL ANALYSIS FOR EDUCATIONAL RESEARCH III  (3)
PR: EDF 7408 or CI. Theory of and application of experimental design and linear modeling to problems in educational research. Multiple correlation and regression—a specific technique and a general approach to statistical inference (analysis of variance and co-variance). Elements of matrix algebra. Coordinated use of computer as a data processing resource.

EDF 7437  ADVANCED MEASUREMENT I  (3)
PR: EDF 7407 or equivalent and EDF 6431 or equivalent. A first advanced graduate course in the nature and theory of measurement. Alternative statistical theories of measurement. Logical, empirical, and statistical models of measurement processes. Measurement scales and levels of measurement. Reliability of educational measurement. Critique of commercially available instruments for measurement in education.

EDF 7438  ADVANCED MEASUREMENT II  (3)

EDF 7484  STATISTICAL ANALYSIS FOR EDUCATIONAL RESEARCH IV  (3)
PR: EDF 7409 or CI. Fundamentals and applications of the following multivariate statistical procedures to problems in educational research: Commonality analysis, path analysis, factor analysis, canonical variate analysis, discriminant analysis. Use of packaged computer programs with various multivariate analysis procedures.

EDF 7485  EVALUATION IN EDUCATION: THEORY AND PRACTICE  (3)
PR: EDF 7408, EDF 7493 or CI. Application of evaluation theory and practice to the systematic study of problems and programs in education. Review and synthesis of students' prior knowledge. Update of most recent developments in evaluation. Development of a defensible, coherent approach to evaluation. Formal application of evaluation approach to an educational problem or program.

EDF 7488  APPLICATION OF COMPUTER LANGUAGE AND PROCEDURES IN EDUCATION  (1)
Development of understanding and technical skill in relation to computer and data processing approaches to solution of educational research, and administrative problems. Training in use of Fortran as a programming language.

EDF 7493  RESEARCH-BASED PLANNING EVALUATION AND DEVELOPMENT IN EDUCATION  (3)
Introduction to systematic planning and development procedures including needs assessment, proposal development, evaluation design and process engineering. Emphasis placed on analysis of evaluation models and theory.

EDF 7494  SYSTEMS APPROACHES IN EDUCATION  (3)

EDF 7490  PRACTICUM IN EDUCATIONAL PLANNING, EVALUATION, AND DEVELOPMENT  (1-8)
PR: EDF 7407, EDF 7408, EDF 7409, EDF 7493. Supervised practicum in which the student assumes major responsibility for a significant planning, evaluation, or development activity. May be repeated up to 12 credit hours. (S/U only.)

MENTAL RETARDATION EDUCATION

UNDERGRADUATE COURSES

EMR 3011  INTRODUCTION TO MENTAL RETARDATION  (3)
PR: EEX 3010. Introduction to the classification, diagnosis, characteristics, and treatment of the mentally retarded.

EMR 3800  UNDERGRADUATE SUPERVISED PRACTICUM IN MENTAL RETARDATION  (4)
PR: EMR 3011 and major in Mental Retardation. Supervised Practicum experiences in the educational, social and vocational programming for mentally retarded individuals. A one hour per week seminar is required concurrently.

EMR 4310  PROCEDURES AND MATERIALS FOR ELEMENTARY AGE EDUCABLE MENTALLY RETARDED CHILDREN  (3)
PR: EMR 3011, RED 4310, a current major in an Exceptional Child program, EMR 3800 either previously or concurrently. Special class organization, curriculum development, procedures and materials for elementary aged educable mentally retarded children.

EMR 4313  PROCEDURES AND MATERIALS FOR SECONDARY AGE EDUCABLE MENTALLY RETARDED YOUTH AND ADULTS  (3)
PR: EMR 3011 and Exceptional Child Education major. Special class organization; curriculum development, procedures and materials for secondary age educable mentally retarded youth and adults.

EMR 4321  EDUCATIONAL PROCEDURES FOR THE TRAINABLE MENTALLY RETARDED  (3)
PR: EMR 3011 and an Exceptional Child Education major. Special class organization, curriculum development, methods and techniques of teaching the trainable retarded.

EMR 4905  INDEPENDENT STUDY: MENTAL RETARDATION  (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)
MUE 4909 DIRECTED STUDY: MENTAL RETARDATION (1-3)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

EMR 4936 SENIOR SEMINAR IN MENTAL RETARDATION (2)

EMR 4940 INTERNSHIP: MENTAL RETARDATION (1-12)
One full semester of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more semesters, students will be registered for credit which accumulates from 9 to 12 semester hours. (S/U only.)

GRADUATE COURSES

EEX 6303 ADVANCED EDUCATIONAL PROCEDURES FOR THE MENTALLY RETARDED (3-5)
PR: EMR 4310 or EMR 4321. Specific curriculum and methodological problems in teaching the retarded.

EMR 5012 THE SLOW LEARNER IN THE SCHOOL (3)
Characteristics, needs and educational planning for the slow learning child. Appropriate for special class teachers and regular class teachers.

EMR 5803 GRADUATE SUPERVISED PRACTICUM IN MENTAL RETARDATION (1-9)
Supervised graduate practicum encompassing teaching and supervising experiences in public school classes for the mentally retarded.

EMR 6932 BIOLOGICAL ASPECTS OF MENTAL RETARDATION (3)
PR: EMR 3011 or CL. The contribution of biological factors towards the causation of mental deficiency; implications for casefinding, care, and education.

EMR 6934 SOCIOLOGICAL AND EDUCATIONAL ASPECTS OF MENTAL RETARDATION (3)
PR: EEX 3010 or EEX 6936. Evaluation of relevant literature.

MUSIC EDUCATION

UNDERGRADUATE COURSES

MUE 2420 THEORETICAL BASES OF MUSIC EDUCATION (1)
The course is designed to investigate music education practices in the schools. It provides the student with experiences and information early in his academic career which will enable him to determine his commitment to professional music education.

MUE 3411 CHORAL MATERIALS PRACTICUM (1)
PR: CI. A study of choral materials in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each semester. May be repeated for a total of 3 credit hours.

MUE 3413 BAND MATERIALS PRACTICUM (1)
PR: CI. A study of band materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each semester. May be repeated for a total of 3 credit hours.

MUE 3414 ORCHESTRA MATERIALS PRACTICUM (1)
PR: CI. A study of orchestra materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each semester. May be repeated for a total of 3 credit hours.

MUE 4050 FOUNDATIONS OF INSTRUMENTAL MUSIC (3)
PR: CI, Junior standing. Introduction to the foundations of instrumental music instruction in the elementary and middle school.

MUE 4130 CLASSROOM MUSIC IN THE SECONDARY SCHOOL (3)
PR: CI. Development and implementation of methods and techniques for teaching music to the student not participating in secondary school music performing groups.

MUE 4314 MUSIC IN THE ELEMENTARY SCHOOL (3)
A study of principles, techniques, materials, and activities as they relate to a comprehensive music curriculum in Grades K-6.

MUE 4331 CHORAL METHODS IN THE SECONDARY SCHOOL (3)

MUE 4332 INSTRUMENTAL MUSIC IN THE SECONDARY SCHOOL (3)

MUE 4480 BAND PAGEANTRY (1)
This course is designed as an elective offering for instrumental music majors who expect to direct band activities in a secondary school. It will provide the student with skills in creating half-time shows, an integral part of the band teacher's responsibilities.

MUE 4905 INDEPENDENT STUDY: MUSIC EDUCATION (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

MUE 4909 DIRECTED STUDY: MUSIC EDUCATION (1-3)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

MUE 4936 SENIOR SEMINAR IN MUSIC EDUCATION (2)

MUE 4940 INTERNSHIP: MUSIC EDUCATION (1-12)
One full semester of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more semesters, students will be registered for credit which accumulates from 9 to 12 semester hours. (S/U only.)

GRADUATE COURSES

MUE 6080 FOUNDATIONS AND PRINCIPLES OF MUSIC EDUCATION (3)
PR: Acceptance into Music Education Graduate Program or CI. Investigation of historical, philosophical and psychological foundations of music education.

MUE 6116 ADVANCED ELEMENTARY SCHOOL MUSIC (3)
PR: Acceptance in the Music Education Graduate Program or CI. Study and appraisal of children's musical growth, curriculum plans, materials and teaching techniques essential for the sequential development of musical learnings.

MUE 6189 MUSIC SUPERVISION AND ADMINISTRATION (3)
The music curriculum in relation to the total school program; staff and budgetary needs.

MUE 6415 ADVANCED SECONDARY VOCAL MUSIC (3)
PR: Acceptance in the Music Education Graduate Program or CI. Course provides for graduate students in music education the opportunity to examine current research related to the teaching of secondary school vocal music, evaluate curricula, music materials, and teaching methods that will enable them to develop a vocal music program which emphasizes musical sensitivity.

MUE 6418 ADVANCED MATERIALS FOR INSTRUMENTAL MUSIC EDUCATION (3)
PR: Acceptance in the Music Education Graduate Program and CI. Course designed to examine published and unpublished materials, develop curricula and resources, including media hardware, appropriate for use in school instrumental music programs.

MUE 6495 INSTRUMENTAL CONDUCTING IN THE SECONDARY SCHOOLS (3)
PR: Acceptance in the Music Education Graduate program or
PHYSICAL EDUCATION FOR TEACHERS

UNDERGRADUATE COURSES

HES 2400 FIRST AID (2)
Meets the American Red Cross certification requirements in standard and advanced first aid.

LET 4007 COMMUNITY RECREATION (3)
Introduction to recreational outlets in the community and the administrative problems confronting recreational playground leaders and directors of community recreational programs. Offered on Independent Study basis only.

PET 3001C INDIVIDUAL ASSESSMENT (2)
A personal evaluation of various factors related to the effective teaching of physical education. An individual profile that can be used for counseling purposes will be the final product of this course.

PET 3372 HUMAN KINETICS I (6)
The structure and function of the skeletal, muscular, and nervous systems of the human body related to developmental movement and to impairments. The mechanical laws of physics as they contribute to those movements within the body which result in efficient running, jumping, throwing, catching, striking and kicking.

PET 3434C MOVEMENT EDUCATION THEORY AND APPLICATION I (3)
A two course sequence emphasizing movement experiences appropriate for elementary school children. The philosophy, objectives, and analytical framework of movement education are studied relative to basic movement concepts.

PET 3435C MOVEMENT EDUCATION THEORY AND APPLICATION II (3)
PR: PET 3434C. A two course sequence emphasizing movement experiences appropriate for elementary school children. The philosophy, objectives, and analytical framework of movement education are studied relative to basic movement concepts.

PET 3944C SEMINAR AND INTERNSHIP I (5)
Elementary school physical education teaching experiences are provided for students with added focus on the upper elementary grades. Seminars emphasize planning and teaching methodology. Health and recreation as they relate to elementary school children are studied.

PET 3944C SEMINAR AND INTERNSHIP II (5)
Physical education teaching experience is provided at various grade levels. Seminars are concerned with organization, evaluation, and extra-class activities. Individual teaching is analyzed and programmed.

PET 4302 PRINCIPLES AND ISSUES IN COACHING (4)
The application of principles from philosophy, psychology, sociology, and physiology to competitive athletics and coaching.

PET 4361C APPLIED HUMAN KINETICS I (4)
The focus is on the biomechanical analysis of movement in dance and selected sports, physical fitness, and exercise principles as related to teaching. Emphasis is directed to developing competency in teaching all aspects of individual and team sports and in teaching specialized health-related topics such as weight control and individual fitness assessment techniques.

PET 4362C APPLIED HUMAN KINETICS II (4)
The biomechanical analysis of movement, principles of psychomotor learning, teaching methodologies, and teaching competencies in individual and team sports and in teaching specialized health-related topics such as weight control and individual fitness assessment techniques.

PET 4362C APPLIED HUMAN KINETICS II (4)
The biomechanical analysis of movement, principles of psychomotor learning, teaching methodologies, and teaching competencies in individual and team sports. The emphasis is on designing appropriate teaching/learning environments for secondary school physical education.

PET 4905 INDEPENDENT STUDY: PROFESSIONAL PHYSICAL EDUCATION (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

PET 4909 DIRECTED STUDY: PROFESSIONAL PHYSICAL EDUCATION (1-3)
PR: Senior standing. To extent competency in teaching field. Offered only as a scheduled class.

PET 4943C SEMINAR AND INTERNSHIP III (5)
Supervised teaching experiences in physical education at the secondary school level. On-campus seminars emphasize developmental stages of junior and senior high school students; the influence of various teaching styles on the learning process; the process of individualization and structuring meaningful learning experiences in the psychomotor, cognitive, and affective domains.

PET 4944C SEMINAR AND INTERNSHIP IV (5)
Supervised internship in physical education in the public schools or allied community-based programs. On-campus seminars explore relevant issues in the physical education profession.

PET 4946C SEMINAR AND INTERNSHIP V (5)
Supervised internship in physical education in the public schools or allied community-based programs. On-campus seminars explore relevant issues in the physical education profession.

PET 5001C APPLIED HUMAN KINETICS I (4)
The focus is on the biomechanical analysis of movement in dance and selected sports, physical fitness, and exercise principles as related to teaching. Emphasis is directed to developing competency in teaching all aspects of individual and team sports and in teaching specialized health-related topics such as weight control and individual fitness assessment techniques.

PET 5002C APPLIED HUMAN KINETICS II (4)
The biomechanical analysis of movement, principles of psychomotor learning, teaching methodologies, and teaching competencies in individual and team sports and in teaching specialized health-related topics such as weight control and individual fitness assessment techniques.

PET 5002C APPLIED HUMAN KINETICS II (4)
The biomechanical analysis of movement, principles of psychomotor learning, teaching methodologies, and teaching competencies in individual and team sports. The emphasis is on designing appropriate teaching/learning environments for secondary school physical education.

PET 5945C SEMINAR AND INTERNSHIP VI (5)
Supervised teaching experiences in physical education at the secondary school level. On-campus seminars emphasize developmental stages of junior and senior high school students; the influence of various teaching styles on the learning process; the process of individualization and structuring meaningful learning experiences in the psychomotor, cognitive, and affective domains.

PET 5946C SEMINAR AND INTERNSHIP VII (5)
Supervised internship in physical education in the public schools or allied community-based programs. On-campus seminars explore relevant issues in the physical education profession.

GRADUATE COURSES

PET 6051C PROFESSIONAL ASSESSMENT (3)
Selected readings of current trends in physical education; discussion of philosophies of teaching; and individual appraisal of knowledge, values attitudes and professional competencies.

PET 6205 SOCIO-PSYCHOLOGICAL ASPECTS OF HUMAN MOVEMENT (3)
Involves the psychological and sociological implications of movement to historical and contemporary man. Emphasis on concept, role of movement in society and values and attitudes held toward movement.

PET 6296 SPECIALIZED STUDY IN SOCIO-Psychological Aspects of Human Movement: (Subject) (1-4)
Will provide in-depth study in specific areas related to sociological and psychological principles of human movement. May be repeated for credit.

PET 6345 BIO-KINETICS OF HUMAN MOVEMENT (3)
Integration of basic kinesiological foundations applied to teaching physical education. Specific topics include: physical growth and neuro-muscular development, role of neuro-muscular mechanisms in motor performance, physical principles of human movement and the effects of exercise on the muscular and cardiorespiratory systems.

PET 6396C SPECIALIZED STUDY IN BIOMECHANICS OF HUMAN MOVEMENT (1-4)
Will provide in-depth study in specific areas related to neurological, physiological, and mechanical principles of human development. May be repeated for credit.
PET 6425 CURRICULUM AND INSTRUCTIONAL PROCESS IN PHYSICAL EDUCATION (3)
Application of learning theory and education innovations, study of structure of subject matter and styles of teaching and investigation of the nature of the learner as these relate to teaching physical education. Fieldwork may be a requirement of this course.

PET 6496 SPECIALIZED STUDY IN CURRICULUM AND INSTRUCTIONAL PROCESS IN PHYSICAL EDUCATION (1-4)
Will provide in-depth study in specific areas related to the teaching-learning process of physical education. May be repeated for credit.

PET 6645 PHYSICAL EDUCATION FOR THE HANDICAPPED (4)
The course is concerned with the motor performance and physical fitness of handicapped individuals. Study includes psycho-educational characteristics; planning, conducting, and evaluating individualized programs of physical education, and review of relevant literature. Fieldwork may be required.

PET 6646 PHYSICAL EDUCATION FOR THE HANDICAPPED PRACTICUM (2-4)
PR: PET 6645 or CI. School or treatment center based on experiences providing evaluation and instructional services. Seminars are conducted to discuss professional literature, teaching strategies and curriculum organization and evaluation. May be repeated for credit.

PET 6910L RESEARCH PROJECT IN PHYSICAL EDUCATION (1-4)
In-depth research study of selected topics concerning human movement. Topics will vary according to needs and interests of students. May be repeated for credit.

READING EDUCATION

UNDERGRADUATE COURSES

RED 4337 READING IN THE SECONDARY SCHOOL (3)
PR: CI. Basic course in Reading for Secondary school personnel. Work with a student is required.

RED 4360 READING IN SECONDARY CONTENT AREAS (2)
PR: CI-and other content area PR or CR. Provides basic instruction on phonics, word recognition, readability, interests, corrective procedures, reading behaviors, comprehension, etc. Offered only in conjunction with special content reading courses.

RED 4515 CORRECTIVE READING FOR THE CHILD (3)
PR: RED 4310 or equivalent. Procedures for meeting individual differences through diagnosis of needs, differentiated instruction, selective use of materials, and classroom organization.

RED 4905 INDEPENDENT STUDY: READING EDUCATION (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

RED 4909 DIRECTED STUDY: READING EDUCATION (1-3)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

GRADUATE COURSES

RED 6247 CURRICULUM AND SUPERVISION PROBLEMS IN READING (3)
PR: EDF 6431, RED 6116, RED 6546, RED 6548, and CI. Planning and administering programs and preparation as consultants in reading. Intensive work on individual project required.

RED 6365 READING IN SECONDARY AND HIGHER EDUCATION (3)
PR: CI and graduate standing; RED 4310, RED 4337, or RED 4360. The course is designed for graduate students and inservice teachers with appropriate B.A. degrees, who need and/or desire more knowledge beyond an introductory level about reading at the Secondary (7-12) and higher (Community College, University) levels. Students study reading as it applies to their discipline and their level. A research paper is required. Not for undergraduates nor to be used as first course in Reading.

RED 6516 CORRECTIVE READING IN THE CLASSROOM (3)
PR: RED 4310 or equivalent. Use of diagnostic and prescriptive procedures with individual and group reading instruction.

RED 6546 DIAGNOSIS OF READING DISABILITIES (3)
PR: EDF 6431, RED 6116. Causes of reading disability; techniques and materials in diagnosis of reading problems, including telebinocular and audiometer screening. Diagnoses of reading disabilities are required.

RED 6787 TECHNIQUES OF REMEDIAL READING (3)
PR: EDF 6431, RED 6116, and RED 6546. Materials and methods in remediation of moderate to severe reading disability cases. Supervised individual tutoring and in-depth evaluation and use of materials.

RED 6747 SURVEY OF READING RESEARCH (2)
PR: EDF 6431, RED 6116, RED 6546, CI. This course will address topics related to the location of research information, to the reading and evaluation of research, and to the identification and understanding of important studies. May be repeated up to 4 hours.

RED 6748 PROJECT IN READING RESEARCH (2)
PR: EDF 6431, EDF 6481, RED 6116, RED 6546, RED 6747, CI. This course continues the study of research in reading and culminates in a written paper reviewing the research in a specific area. May be repeated up to 6 hours.

RED 6838 PRACTICUM IN READING (4)
PR: EDF 6431, RED 6116, RED 6546, RED 6548, and CI. Remediation of severe reading disability cases, tutoring of individuals and smaller groups, interview techniques, preparation of case reports.

RED 7048 READING AS A SYMBOLIC PROCESS (3)
PR: RED 6116 or RED 6365. Advanced graduate standing in Reading/Language Arts or CI. Examination and understanding of the relationship of the various perceptual, learning, affective, and cognitive processes to the acquisition of reading competencies.

RED 7848 ADVANCED CLINICAL PRACTICUM READING (3-6)
PR: EDF 6143, RED 6546, RED 6548, RED 6838, and Advanced Graduate standing in Reading/Language Arts. Clinical diagnosis and remediation of severe reading disability cases with emphasis on multi-disciplinary approach. Supervision of master students in the RED 6546, RED 6548, RED 6838 sequence. May be repeated for a maximum of six hours.

RED 7938 ADVANCED GRADUATE SEMINAR IN READING/LANGUAGE ARTS (2)
Discussion and evaluation of current issues and research in Reading/Language Arts and related fields. Must be repeated for six semester hours. Required for each Ph.D. student. (Topics differ each semester.)

SCIENCE EDUCATION

UNDERGRADUATE COURSES

SCE 4305 COMMUNICATION SKILLS IN THE SCIENCE CLASSROOM (2)
PR: RED 4360 or CR in RED 4360. Reading and communication skills important in understanding scientific literature and communicating findings to others.

SCE 4330 TEACHING METHODS IN THE SECONDARY SCHOOL-SCIENCES (3)
PR: Completion of 26 hours in approved science areas or CE completion of EDG 4200 or CR in EDG 4200. Techniques and materials of instruction in secondary school sciences.

SCE 4638 NEW TRENDS IN TEACHING THE PHYSICAL SCIENCES (3)
Physical Science Study Committee Physics. Chemical Education
SCE 4631 NEW TRENDS IN TEACHING BIOLOGY (3) Recent developments in curriculum materials and in strategies for teaching biological sciences, grades 7-12. Recommended for preservice teachers of secondary school biology.

SCE 4905 INDEPENDENT STUDY: SCIENCE EDUCATION (1-4) PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

SCE 4909 DIRECTED STUDY: SCIENCE EDUCATION (1-3) PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

SCE 4936 SENIOR SEMINAR IN SCIENCE EDUCATION (2) PR: Senior standing. Synthesis of teacher candidate's courses in complete college program. Required concurrently with internship.

SCE 4940 INTERNSHIP: SCIENCE EDUCATION (1-12) One full Semester of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more Semesters, students will be registered for credit which accumulates from 9 to 12 Semester hours. (S/U only.)

GRADUATE COURSES

SCE 5937 SELECTED TOPICS IN SCIENCE EDUCATION (1-4) May be repeated when topics are not duplicated.

SCE 6336 TEACHING SECONDARY SCHOOL BIOLOGY (3) PR: CI. Effective use and production of instructional materials in the biological sciences. Interrelation of philosophy, materials, and classroom practices.

SCE 6436 TEACHING SECONDARY SCHOOL PHYSICAL & EARTH SCIENCES (3) PR: CI. Effective use and production of instructional materials in the physical and earth sciences. Interrelation of philosophy, materials, and classroom practices.

SCE 6634 CURRENT TRENDS IN SECONDARY SCIENCE EDUCATION (3) PR: Bachelor's degree with major in science area: certification in secondary science, or CI. Curricular patterns and instructional practices in secondary science.

SCE 7641 PROGRAMS AND RESEARCH IN EARTH SCIENCE EDUCATION (3) PR: Master's degree or equivalent in Science Education or CI. A study of curricula, issues, and research in Earth Science Education, grades K-12. Also included are the study and application of: (1) skills for assisting pre- and in-service school personnel with Earth Science instruction; and (2) skills for developing Earth Science curricula.

SCE 7642 PROGRAMS AND RESEARCH IN LIFE SCIENCES EDUCATION (3) PR: Master's degree or equivalent in Science Education or CI. A study of curricula, issues and research in Life Science Education, grades K-12. Also included are the study and application of: (1) skills for assisting pre- and in-service school personnel with Life Science instruction; and (2) skills for developing Life Science curricula.

SCE 7643 PROGRAMS AND RESEARCH IN PHYSICAL SCIENCE EDUCATION (3) PR: Master's degree or equivalent in Science Education or CI. A study of curricula, issues and research in Physical Science Education, grades K-12. Also included are the study and application of: (1) skills for assisting pre- and in-service school personnel with Physical Science instruction; and (2) skills for developing Physical Science curricula.

SOCIAL SCIENCE EDUCATION

UNDERGRADUATE COURSES

SSE 4333 INTRODUCTION TO SECONDARY SOCIAL STUDIES TEACHING (3) PR: EDG 4200 or CR in EDG 4200. Techniques and materials of instruction in social studies.

SSE 4640 COMMUNICATION SKILLS IN THE SOCIAL STUDIES (2) PR: CI. Communication Skills in the Social Studies. Methods of dealing with reading problems in social studies. This course and RED 4360 satisfy the state certification requirement pertaining to secondary reading. (S/U only.)

SSE 4905 INDEPENDENT STUDY: SOCIAL SCIENCE EDUCATION (1-4) PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

SSE 4909 DIRECTED STUDY: SOCIAL SCIENCE EDUCATION (1-3) PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

SSE 4936 SENIOR SEMINAR IN SOCIAL SCIENCE EDUCATION (2) PR: Senior standing. Synthesis of teacher candidate's courses in complete college program. Required concurrently with internship.

SSE 4940 INTERNSHIP: SOCIAL SCIENCE EDUCATION (1-12) One full Semester of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more Semesters, students will be registered for credit which accumulates from 9 to 12 Semester hours. (S/U only.)

GRADUATE COURSES

SSE 6117 ELEMENTARY SOCIAL STUDIES CURRICULUM (3) PR: Admission to College of Education or CI. Evaluation of past and present curriculum in Elementary Social Studies.

SSE 6133 SECONDARY SOCIAL SCIENCE CURRICULUM (3) PR: Admission to College of Education or CI. Evaluation of past and present curriculum in Secondary Social Science.

SSE 6334 CRITIQUE OF SELECTED SOCIAL SCIENCE EDUCATION LITERATURE (3) PR: Major in Secondary Social Science or CI. An investigation into various selected readings in Social Science Education literature.

SSE 6445 EVALUATION AND IMPLEMENTATION OF MEDIA IN SOCIAL STUDIES (3) PR: CI. Techniques of evaluation and using various media in the Social Studies.

SSE 6636 CURRENT TRENDS IN SECONDARY SOCIAL STUDIES (3) PR: SSE 4333 or equivalent or CI. Curricular patterns and instructional practices in Secondary Social Studies.

SSE 6646 INSTRUCTIONAL PROBLEMS AND STRATEGIES IN SOCIAL STUDIES: ELEMENTARY, MIDDLE, OR SECONDARY SCHOOL (3) PR: Admission to Secondary Social Science or CI. Investigation of problems confronted when teaching Social Studies in the elementary, middle, or secondary school.

SSE 6795 REVIEW OF RESEARCH IN SOCIAL SCIENCE EDUCATION (3) PR: EDF 4430 or EDF 6431. Graduate Students in Education or CI. Investigation into an evaluation of the research in Social Science Education.
SSE 6939 SEMINAR IN SOCIAL SCIENCE EDUCATION (1-3)
PR: EDF 4430 or EDF 6431, or CI. To increase general technological knowledge of graduate students in Social Science Education.

SPECIFIC LEARNING DISABILITIES EDUCATION

UNDERGRADUATE COURSES

ELD 4011 THEORIES IN SPECIFIC LEARNING DISABILITIES (3)
PR: EEX 3010. Characteristics, needs and abilities of children with specific learning disabilities. Emphasis is on theories, issues, trends, and philosophy of problems for such children.

ELD 4110 SKILLS IN DIAGNOSIS AND INSTRUCTION FOR CHILDREN WITH SPECIFIC LEARNING DISABILITIES (3)
PR: ELD 4011 and a Specific Learning Disabilities major. Instructional diagnosis and individualizing instruction for children with specific learning disabilities.

ELD 4905 INDEPENDENT STUDY: SPECIFIC LEARNING DISABILITIES (1-4)
PR: CI. Specialized independent study determined by student's needs and interests. May be repeated when subjects vary. (S/U only.)

ELD 4909 DIRECTED STUDY: SPECIFIC LEARNING DISABILITIES (1-3)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

ELD 4936 SENIOR SEMINAR IN SPECIFIC LEARNING DISABILITIES (3)
PR: Senior standing. Synthesis of teacher candidate’s courses in complete college program. Required concurrently with internship.

ELD 4940 INTERNSHIP: SPECIFIC LEARNING DISABILITIES (1-12)
One full Semester of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more Semesters, the students will be registered for credit which accumulates from 9 to 12 Semesters hours. (S/U only.)

ELD 4944 UNDERGRADUATE SUPERVISED PRACTICUM IN SPECIFIC LEARNING DISABILITIES (4)
PR: EEX 3010, ELD 4011, ELD 4110 and major in Specific Learning Disabilities. Supervised practicum experiences in classes for children with specific learning disabilities.

GRADUATE COURSES

EDG 5734 PLURALISM AND ITS EDUCATIONAL IMPLICATIONS (3)
Characteristics and needs of the culturally disadvantaged and their implications for educational programming.

EDG 6946 FIELD WORK WITH POTENTIALLY HANDICAPPED (CULTURALLY DISADVANTAGED) (1-6)
Teaching and participation in activities related to teaching disadvantaged young children.

ELD 6115 ADVANCED ASSESSMENT AND PROCEDURES FOR SPECIFIC LEARNING DISABLED YOUNGSTERS (3)
PR: CI. Concepts related to the assessment and teaching of specific learning disabled children.

ELD 6141 CURRENT TRENDS AND ISSUES RELATED TO EDUCATING SPECIFIC LEARNING DISABILITIES CHILDREN (3)
PR: CI. Trends and issues related to educating children with specific learning disabilities.

EPH 5051 EDUCATIONAL PROBLEMS OF THE PHYSICALLY HANDICAPPED (3)
PR: EEX 3010 or CI. Introduction to the educational, psychological and social problems of the physically disabled child in the public schools.

EPH 5321 TEACHING THE CEREBRAL PALSID CHILD (3)
PR: EEX 3010 or CI. Introduction to the educational, psycho-aspects of cerebral palsy and its implications for classroom teachers.

EVI 5311 THE VISUALLY HANDICAPPED IN THE CLASSROOM (3)
PR: EEX 3010 and CI. The visually handicapped in the classroom, structure, hygiene and educational implications.

SPEECH COMMUNICATION-ENGLISH EDUCATION

UNDERGRADUATE COURSES

SED 4335 METHODS OF TEACHING SPEECH COMMUNICATION (3)
PR: 14 Semester hours in speech/communication or CI. Investigation of curricular programs in speech communication including courses, curriculum guides, preparation of units and lessons; determination of objectives and teaching strategies; problems of teachers; completion of course with C grade required for recommendation for internship.

SED 4371 DIRECTING SPEECH ACTIVITIES IN THE SECONDARY SCHOOL (3)
PR: 10 hours of speech communication courses or CI. Coaching and directing cocurricular activities in discussion, debate, oratory, theatre, oral interpretation, and extemporaneous speaking. Planning and supervision of tournaments, contest, and festivals. Observations required.

SED 4374 READING IN SPEECH COMMUNICATION INSTRUCTION (2)
PR: RED 4360 or in conjunction with this course. Strategies and materials for teaching oral and silent reading in speech and theatre classes at the secondary school level.

SED 4905 INDEPENDENT STUDY: SPEECH COMMUNICATION-ENGLISH EDUCATION (1-4)
PR: CI. Specialized independent study determined by the student’s needs and interests. May be repeated when subjects vary. (S/U only.)

SED 4909 DIRECTED STUDY: SPEECH COMMUNICATION-ENGLISH EDUCATION (1-3)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

SED 4936 SENIOR SEMINAR IN SPEECH COMMUNICATION-ENGLISH EDUCATION (2)
PR: Senior standing. Synthesis of teacher candidate’s courses in complete college program. Required concurrently with internship.

SED 4940 INTERNSHIP: SPEECH COMMUNICATION-ENGLISH EDUCATION (1-12)
One full Semester of internship in public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more Semesters, students will be registered for credit which accumulates from 9 to 12 Semester hours. (S/U only.)
COLLEGE OF ENGINEERING

BASIC AND INTERDISCIPLINARY ENGINEERING

UNDERGRADUATE COURSES

EGN 1002 ENGINEERING ORIENTATION (0)
The role of engineering in society, characteristics of different fields of engineering, required preparation for engineering careers, techniques and approaches used by engineers in their profession. (S/U only.)

EGN 1115 INTRODUCTION TO DESIGN GRAPHICS (3)
An introduction to the basic principles of engineering design. The course will include the graphic projective systems used in engineering drawing and design. Methods of graphic communication and graphic analysis of engineering design problems will be investigated.

EGN 1402 GRAPHIC ANALYSIS III (2)
PR: EGN 1115. An elective course designed for students with limited background in pre-calculus mathematics necessary for graphical processes. Emphasis on graphical concepts of algebraic and trigonometric relationships.

EGN 1403 GRAPHIC ANALYSIS IV (2)
Continuation of EGN 1402.

EGN 2021L INTRODUCTION TO ENGINEERING I (2)
To present an overview of Engineering, its role and its concepts. Experimental program; see adviser.

EGN 2210 FORTRAN FOR ENGINEERS (3)
FORTRAN programming for engineers. Solving engineering-type problems using the computer; introduction to programming algorithms used by the practicing engineer.

EGN 2410 ENGINEERING PROBLEMS I (2)

EGN 3313 STATICS (2)
PR: MAC 3281. Principles of statics, mechanical equilibrium, forces, moments, plane trusses. Lec.-pro.

EGN 3321 DYNAMICS (3)
PR: EGN 3313. Dynamics of discrete particles; kinematics and kinetics for rigid bodies. Lec.

EGN 3331 MECHANICS OF MATERIALS (3)
PR: EGN 3313. Stress, strain, Hook's Law; torsion, beam, column analysis; combined stresses; inelastic effects, limit design. Lec.

EGN 3332 MECHANICS OF MATERIALS LABORATORY (1)

EGN 3343 THERMODYNAMICS I (3)

EGN 3354C BASIC FLUID MECHANICS (3)
PR: EGN 3321. Fundamental and experimental concepts in ideal and viscous fluid theory; momentum and energy consideration, introduction to hydraulics, pipe flow. Lecture.

EGN 3365L MATERIALS ENGINEERING I (3)
PR: CHM 2046. EGN 3313. Structure and property relationships in engineering materials, i.e., metal, ceramic and polymer systems. Environmental effects are also treated.

EGN 3373 INTRODUCTION TO ELECTRICAL SYSTEMS I (3)

EGN 3374 INTRODUCTION TO ELECTRICAL SYSTEMS II (3)
PR: EGN 3373. Continuation of EGN 3373.

EGN 3375 INTRODUCTION TO ELECTRICAL SYSTEMS III (3)
PR: EGN 3373. Continuation of EGN 3373 or EGN 3374.

EGN 3433L MODELING AND ANALYSIS (3)

EGN 3443 ENGINEERING STATISTICS I (3)
PR: MAC 3282. An introduction to the basic concepts of statistical analysis with special emphasis on engineering applications.

EGN 3613 ENGINEERING ECONOMY I (3)
A study in analyzing the economic limitations imposed on engineering activities using basic models which consider the time value of money.

EGN 4421 ENGINEERING ANALYSIS I (3)

EGN 4422 NUMERICAL METHODS OF ANALYSIS (3)

EGN 4450 INTRODUCTION TO LINEAR SYSTEMS (2)
PR: EGN 4421. Study and application of matrix algebra, differential equations and calculus of finite differences.

EGN 4935 INDEPENDENT STUDY (1-5)
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. (S/U only.)

EGN 4936 PROFESSIONAL ENGINEERING SEMINAR I (1-5)
PR: CI. A lecture-discussion seminar on modern trends in the engineering profession.

EGN 4937 PROFESSIONAL ENGINEERING SEMINAR II (1-5)
PR: CI and Senior standing. An examination of current engineering and related problems facing the graduating senior.

GRADUATE COURSES

EGN 5422, 5423, 5424, 5425 ENGINEERING ANALYSIS II, III, IV, V (3,3,3,2)
PR: CC or MAP 4302. (1) A course sequence covering ordinary differential equations with emphasis on series solutions and numerical methods. (2) Vector analysis, partial differential equations, boundary value problems and orthogonal functions. (3) and (4) Functions of a complex variable with applications. (var.)

EGN 6907 INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

EGN 6911 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

EGN 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

EGN 6991 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit. Repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

EGN 6992 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit. Repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

EGN 7911 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

EGN 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)
CHEMICAL AND MECHANICAL ENGINEERING

UNDERGRADUATE COURSES

ECH 4413 SEPARATION PROCESSES AND PHASE EQUILIBRIA (4)
PR: EMC 3103. Phase equilibria in the context of design and selection of separation processes. Familiarization with computational approaches used in process design and use of state of the art correlation for equipment specification.

ECH 4415 REACTING SYSTEMS AND CHEMICAL EQUILIBRIA (4)
PR: ECH 4413. Equilibria and rate phenomena in reacting systems. Description of homogeneous chemical reactors for process design and control.

ECH 4615 PLANT DESIGN AND ECONOMICS (4)
PR: Senior standing in chemical engineering and CI. This course will expose students to the design of a major process. Design problems obtained from industry are used. Attention is given to techniques for estimating capital and operating costs and methods available for selection of alternatives. Constraints imposed on design by safety and environmental protection are emphasized.

ECH 4714 INDUSTRIAL CHEMISTRY (2)
PR: CHM 3210, ECH 4415. A critical study of selected chemical process industries in order to give the student a better understanding of the direct application of basic chemical process principles.

EMC 3103 THERMODYNAMICS II (4)
PR: EGN 3343. Mass and energy balances on steady and unsteady state systems with and without chemical reactions. Combustion processes, power and refrigeration cycles.

EMC 3117 TRANSPORT PROCESSES I (2)
PR: EMC 3343. Principles of momentum, heat, and mass transfer. Emphasis on process heat transfer and mass transfer operations. Selection of heat exchangers and applications to humidification and scrubbing.

EMC 3301 INSTRUMENT SYSTEMS I (2)
PR: EGN 3373. Basic electrical measurements, analogies to non-electrical measurements, applications of operational amplifiers to instrumentation problems in mechanical and chemical engineering, interfacing of components in instrumentation systems. Calibration of transducers.

EMC 3303 CHEMICAL AND MECHANICAL ENGINEERING LABORATORY I (2)
PR: EGN 3343, EMC 3301. Introduction to engineering laboratory measurement with emphasis on the use of the library and the writing of technical reports. Experiments in the measurement of temperature, pressure, fluid flow, psychrometric properties of air, concentration, viscosity. Determination of mass-energy balances of simple system. Preparation of formal engineering reports covering laboratory work.

EMC 4112 ELECTRONIC EQUIPMENT COOLING (2)

ECH 4118 TRANSPORT PROCESSES II (4)
PR: EMC 3117. Principles of momentum, heat and mass transfer. Boundary layer theory and pipe flow. Emphasis given to pumping and metering of compressible and incompressible fluids. Selection of proper fluid handling equipment to satisfy realistic process demands.

EMC 4302 INSTRUMENT SYSTEM II (2)
PR: EMC 3301 or CI. An introduction to digital devices and their applications in instrumentation, process monitoring and control.

EMC 4311 CONTROLS LABORATORY (1)
PR: EGN 3433. CR: EMC 4314. Familiarization with and performance testing of automatic control systems.

EMC 4314 AUTOMATIC CONTROLS I (4)
PR: EGN 3433. Analysis of devices for measurement and control and factors affecting process dynamics. Block diagram representation of control systems. Modes of control for single loops and consideration of advanced techniques such as feed forward and ratio control. Lec.-lab.

EMC 4411 COMPUTER SIMULATION I (2)
PR: EGN 3433. The use of computers to study the dynamic behavior of chemical and mechanical engineering processes.

EMC 4522L CHEMICAL AND MECHANICAL ENGINEERING LABORATORY II (1)
PR: EMC 3303L. Continuation of EMC 3303L with emphasis on material and energy balances of mechanical and chemical systems and processes. Lec.-lab.

EMC 4523L CHEMICAL AND MECHANICAL ENGINEERING LABORATORY III (1)
PR: EMC 4522L or CI. Continuation of EMC 4522L. Emphasis on experiments involving momentum transfer and non-Newtonian fluids, heat transfer and mass diffusion.

EMC 4905 INDEPENDENT STUDY (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated up to 15 credit hours. (S/U only.)

EMC 4930 SPECIAL TOPICS IN CHEMICAL AND MECHANICAL ENGINEERING I (1-4)
PR: CC.

EMC 4931 SPECIAL TOPICS IN CHEMICAL AND MECHANICAL ENGINEERING II (1-4)
PR: CC.

EML 3264 KINEMATICS (2)
PR: MAC 3282, PHY 3040. Plane and angular motion; determination of velocities and accelerations in mechanisms. Rolling and sliding contact pairs, cams, gears.

EML 3500 MACHINE ANALYSIS AND DESIGN I (3)
PR: EGN 3313. Stress and deflection analysis of machine parts, variable loads, endurance limits, fasteners, bearings, power transmission, code consideration of pressure and vacuum vessels, elements of design.

EML 4265 DYNAMICS OF MACHINERY I (3)
PR: EML 3264. Static forces and inertia forces in machines, flywheels, balancing rotating masses, balancing reciprocating masses, gyroscopic effects, mathematical analysis of lumped parameter mechanical systems.

EML 4503 MACHINE ANALYSIS AND DESIGN II (3)

EML 4509 PROJECT DESIGN I (3)
PR: Senior standing in mechanical engineering or CC. Comprehensive design or feasibility project requiring application of previously acquired engineering knowledge.

EML 4510 PROJECT DESIGN II (3)
PR: EML 4509 or CC. Comprehensive design or feasibility study project. In some cases may be a continuation of EML 4509.

EML 4513 POWER PLAN ANALYSIS AND DESIGN (3)
PR: EML 3103, EMC 3117. Basic considerations of power plant design and equipment selection. Fuels, combustion, steam generator design. Reheat-regeneration cycles, heat rate, load management economics.

EML 4601 REFRIGERATION AND AIR CONDITIONING (3)
PR: EML 3103, EMC 3117. Application of thermodynamics, heat transfer, and fluid flow to sizing of HVAC systems. Heating and cooling calculations, air requirements, estimation, duct sizing.

ENU 4142 INTRODUCTION TO NUCLEAR ENGINEERING (3)
PR: EML 3103, EMC 3117 or CI. Fundamentals of nuclear reactors, core physics, and fuel enrichment, reactor power cycles, transient reactor performance.

GRADUATE COURSES

ECH 6217 ADVANCED TRANSPORT PHENOMENA (3)
PR: EMC 4118 or CI. Heat, momentum and mass transport with multiphase materials. Basic flow regimes in multiphase flow.
Analysis of packed and fluidized beds.

**ECH 6218 ADVANCED TRANSPORT ANALYSIS (3)**
PR: CI. Steady and transient multi-dimensional momentum and mass transport, emphasis on solution techniques, analytic and numerical.

**ECH 6515 REACTING SYSTEMS (3)**
PR: ECH 4415 or CI. Dynamics of heterogeneous reaction. Economic factors in the design of chemical reactors. Simulation of complex reacting systems.

**ECH 6616 DESIGN AND CASE STUDIES (3)**
PR: ECH 4615. Plant and process design with emphasis on computer aided design.

**EMC 5107 INDUSTRIAL ENERGY CONSERVATION (3)**

**EMC 5109 ENERGY CONVERSION PROJECTS (3)**
PR: CI. Design projects in the area of energy conversion. Contents varies each term.

**EMC 5113 HEAT TRANSFER PROJECTS (3)**
PR: CI. Industrial design projects in the heat transfer field. Varies each term. May be repeated once for credit.

**EMC 5115 PROCESS HEAT TRANSFER (3)**

**EMC 5119 TRANSPORT PHENOMENA PROJECTS (3)**
PR: CI. Design, evaluation and feasibility study projects in transport phenomena. Content varies each term. May be repeated.

**EMC 5303 INSTRUMENT SYSTEMS III (3)**
PR: EMC 4302. Microprocessors and microcomputer applications in instrumentation, process monitoring and control.

**EMC 5315 MACHINE CONTROL SYSTEMS (3)**
PR: EMC 4314 or CI. Machine control system components and their effects on closed loop system performance. Transfer characteristics of hydraulic, pneumatic and electrical elements and processes.

**EMC 5510 MOTOR SELECTION AND CONTROL (2)**
PR: EGN 3373, EGN 3433. Standard electrical voltages. NEMA motor designs, techniques for estimating motor starting times and temperature rise. Control system elements, interlocks, electrical code requirements for conductors and protective devices.

**EMC 5651 INDUSTRIAL AIR POLLUTION CONTROL (3)**
PR: CI. A basic course in the elements of large source air pollution and control. Major units to be considered: Sources, meteorology, diffusion, local influences, control measures, emergencies, protection.

**EMC 5930 SPECIAL TOPICS III (1-4)**
PR: CC.

**EMC 5931 SPECIAL TOPICS IV (1-4)**
PR: CC.

**EMC 6105 ADVANCED THERMODYNAMICS (3)**
PR: CC. Advanced treatment of the general equations of thermodynamics, principal equations of chemical reactions, chemical potential and equilibrium, analysis of metastable states. Irreversibility, steady and unsteady flow.

**EMC 6120 NUMERICAL METHODS IN HEAT TRANSFER (3)**

**EMC 6121 ADVANCED CONDUCTION ANALYSIS (3)**
PR: EMC 4118, EMC 4411. Multi-dimensional heat transfer. Emphasis on solution techniques exact and numerical.

**EMC 6122 RADIATION (3)**
PR: EMC 4118. Review of basic principles of radiation, grey bodies and real surfaces, calculation of shape factors, absorbing gases.

**EMC 6304 INSTRUMENT SYSTEMS IV (3)**
PR: CI. Advanced applications of computers to instrumentation and measurement systems. Case and project oriented.

**EMC 6317 DIRECT DIGITAL CONTROL I (3)**

**EMC 6318 DIRECT DIGITAL CONTROL II (3)**
PR: EMC 6317 or CI. A continuation of EMC 6317 with detailed study of special cases. Cases will vary from term to term.

**EMC 6412 PROCESSES ANALYSIS AND MODELING (3)**
PR: CI. Computer controlled data acquisition and analysis aimed at development and evaluation of empirical and physical models of chemical and mechanical engineering processes.

**EMC 6520 ENERGY TRANSFORMATION AND STORAGE (3)**

**EMC 6650 PROCESS DESIGN FOR ENVIRONMENTAL PROTECTION (3)**
PR: ECH 4415 or CI. Equipment and process design with emphasis on discharge control and environmental protection. Economic and ecological constraints on optimum design.

**EMC 6906 DIRECTED RESEARCH (var.)**
PR: GR. Master's level. Repeatable. (S/U only.)

**EMC 6907 INDEPENDENT STUDY (var.)**
PR: GR. Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

**EMC 6930 SPECIAL PROBLEMS I (1-3)**
PR: CC.

**EMC 6931 SPECIAL PROBLEMS II (1-3)**
PR: CC.

**EMC 6934 ADVANCED SEMINAR (1-3)**
PR: CC.

**EMC 6938 GRADUATE INSTRUCTION METHODS (1-4)**
PR: CC. Special course to be used for training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credits per study. (S/U only.)

**EMC 6939 GRADUATE RESEARCH METHODS (1-4)**
PR: CC. Special course to be used for training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credit hours per student. (S/U only.)

**EMC 6971 THESIS: MASTERS (var.)**
PR: CC. Repeatable. (S/U only.)

**EMC 7915 DIRECTED RESEARCH (var.)**
PR: CC and GR Ph.D. level. Repeatable. (S/U only.)

**EMC 7980 DISSERTATION: DOCTORAL (var.)**
PR: Must be admitted to doctoral candidacy. Repeatable. (S/U only.)

**EML 5241 LUBRICATION (3)**
PR: EML 4503 or CI. The theoretical basis for lubrication and bearing theory. The study of lubrication requirements of different machine types. Introduction to gas bearings.

**EML 5504 MECHANICAL DESIGN OF PROCESS EQUIPMENT (3)**
PR: EML 3500. Design of thin wall pressure vessels, ASME codes, flanges, joints, gasketed surfaces, supports and foundations.

**EML 5509 PROJECT DESIGN III (2)**
PR: CC. Correlation of previously acquired mechanical design experiences with a creative design project. Lec-lab.

**EML 5528 ANALYSIS METHODS FOR MECHANICAL DESIGN (2)**
PR: EML 4503, or CI. Treatment of stress, strain and strengths aspects of machine design. Application of failure theories, residual stresses and energy principles to machine elements.

**EML 6222 VIBRATION ANALYSIS (3)**
PR: EML 4265 or CI. Transient and steady state analysis of mechanical systems with lumped parameters. Computer simula-
tion of systems. Application of generalized coordinates, matrix representation and other methods to lumped parameter systems.

EML 6225 ACOUSTICS AND NOISE CONTROL (3) 

EML 6235 APPLIED ENGINEERING ASPECTS OF FATIGUE (2) 
PR: EML 5528 or CI. Evaluation of strength of machine members under fatigue loadings. Stress concentrations, residual stress effects, surface coatings, environmental effects. Statistical treatment in fatigue analysis.

EML 6273 ADVANCED DYNAMICS OF MACHINERY (3) 
PR: EML 4265 or CI. Detailed study of velocities, accelerations and forces in machines with parts having rotating, reciprocating and combined motion.

EML 6533 ADVANCED MECHANICAL DESIGN (2) 
PR: CC. A technical application course involving the problem of developing machines to perform specified functions. The analysis will include evaluation of kinematic performance, and examination of parts for stress, strain, wear and fabrication process.

EML 6606 HVAC SYSTEMS (3) 
PR: EML 4601 or CI. Design of a HVAC system from concept stage to final plans and specifications, criteria for selection of system type, performance characteristics of single zone, multizone, double duct and variable volume systems.

CIVIL ENGINEERING AND MECHANICS

UNDERGRADUATE COURSES

CES 3400 DESIGN PRINCIPLES AND PRACTICES (2) 
PR: EGN 3354C, EGN 3365L, EGN 3331 Methodology of the design process in civil engineering. Includes problem definition, criteria, data collection and analysis, information sources, planning, specifications, and presentation of technical information.

CES 3402 CIVIL ENGINEERING LABORATORY (1) 
PR: EGN 3331, EGN 3354C, EGN 3365L. A laboratory experience in departmental facilities including the subject areas of structures, materials, fluids, transportation, soils, engineering mechanics and environmental engineering.

CES 4001 STRUCTURES I (3) 
PR: EGN 3331. Analysis of simple structural systems, both determinate and indeterminate. Introduction to the use of energy methods in indeterminate structures.

CES 4002 MATRIX STRUCTURAL ANALYSIS (3) 

CES 4014 ADVANCED MECHANICS OF MATERIALS (3) 
PR: EGN 3331, MAP 4302. Analytical analysis of the mechanical behavior of deformable solids; special topics in beam theory, elastic and inelastic methods, plastic limit analysis; flexure and torsion of beams; electric introduction to finite element computer methods.

CES 4208 STRUCTURAL DYNAMICS (3) 
PR: CES 4001, EGM 4340. Behavior of structural components and systems when subjected to periodic dynamic loads.

CES 4401 STRUCTURAL DESIGN - STEEL (2) 
PR: CES 4501. Design of structures made of steel.

CES 4402 STRUCTURAL DESIGN - CONCRETE (2) 

CES 4403 HYDRAULIC DESIGN (2) 
PR: EGM 4816, ENV 4622. Design of hydraulic systems, including drainage, water supply, and flood control.

CES 4404 FLUID SYSTEMS DESIGN PR: EGM 4816. Design of fluid systems. Consideration of pressure, drag, and gravity forces.

CES 4405 GEOTECHNICAL DESIGN (2) 
PR: ECI 4311. Design of geotechnical systems including bases, foundations, embankments, and dams.

CES 4406 CORROSION CONTROL SYSTEM DESIGN (2) 
PR: ECI 4324. Design of corrosion prevention systems and prediction of the behavior of materials in various corrosive environments.

CES 4407 TRANSPORTATION SYSTEMS DESIGN (2) 
PR: TTE 4404. Design of transportation systems, including airports, highways, mass transit systems, etc.

CES 4408 CEMENT AND CONCRETE DESIGN (2) 
PR: EGN 3365L. Classifications and production of cements. Design and testing of concrete mixes to produce desired properties.

CES 4501 CONCEPTS OF STRUCTURAL DESIGN (3) 
PR: CES 4001. Applications of solid mechanics, material science and structural analysis to the design of buildings, bridges, and mobile structures. Review of current codes and specifications.

CES 4911 SENIOR PROJECT (2) 
PR: CI. Problem-solving experience and training for seniors in research and/or design projects. Written final reports are required.

CES 4933 SPECIAL TOPICS IN CIVIL ENGINEERING AND MECHANICS (1-5) 
PR: CI. New technical topics of interest to civil engineering students.

ECI 4311 SOIL MECHANICS I (3) 
PR: EGN 3354C. Fundamental and experimental concepts in soil mechanics with emphasis on soil properties, soil moisture, soil structure, and shear strength.

ECI 4312 SOIL MECHANICS II (3) 
PR: ECI 4311. A study of the application of the principles of soil mechanics to problems in soils engineering.

ECI 4911 RESEARCH IN CIVIL ENGINEERING AND MECHANICS (1-4) 
PR: CC

EGM 4355 COMPRESSIBLE FLOW (2) 
PR: EGN 3354C. Fundamental and experimental concepts in compressible flow theory of fluids.

EGM 4430 SHOCK AND VIBRATIONS (2) 
PR: EGN 3321, MAP 4302. Response of mechanical systems to shock excitation; vibration of discrete and continuous bodies.

EGM 4610 COMPUTATIONS IN CIVIL ENGINEERING (3) 
PR: MAP 4302. Development of techniques of applied mathematics to civil engineering problems, partial differential equations, vector analysis, complex variables.

EGM 4816 HYDRAULICS (3) 
PR: EGN 3354C. Fundamental and applied aspects of pipe flow, free surface flow, and unsteady flow for hydraulic systems.

EMA 4224 CORROSION OF ENGINEERING MATERIALS I (3) 
PR: EGN 3365L. Principles of electrochemical corrosion and the representation of corrosion processes by polarization diagrams. Origin and prevention of the localized forms of corrosion and approaches to corrosion control.

EMA 4366 MATERIALS ENGINEERING II (3) 
PR: EGN 3365L. Continuation of EGN 3365L. Phase equilibria and its relation to the microstructures and properties of multiphase materials. Heat treatment and processing of steels, aluminum and titanium alloys.

EMA 4503C CORROSION LABORATORY (1) 
PR: EMA 4324. Experimental potentiostatic and galvanostatic polarization studies related to various corrosion phenomena.

EMA 4604 PROCESSES IN MATERIALS ENGINEERING (3) 
PR: EGN 3365L. Introduction to the basic theories of solidification and ultra purification of materials, discussion of the various techniques of welding and joining materials, and discussion of the primary methods of shaping and forming materials.

EMA 4703 CONCEPTS OF ENGINEERING MATERIALS (3) 
mechanics and fatigue damage to materials produced by various environments including elevated temperatures and radiation.

**EMA 4704 SELECTION AND APPLICATION OF ENGINEERING MATERIALS** (3)

PR: EGM 3365L. Determination of the property requirements for the utilization of materials in specific applications, comparison of properties of metals, plastics, and ceramics, the effect of heat treatment, etc., on materials, property limitations.

**EMA 4905 INDEPENDENT STUDY** (1-5)

PR: CC. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. (S/U only.)

**ENV 3001 SOCIOECONOMIC ASPECTS OF ENVIRONMENTAL ENGINEERING** (3)

An introduction to various aspects of environmental problems faced by today's society. Readings and discussions are conducted concerning air pollution, water pollution, noise pollution, solid waste management, ionizing radiation, disease transmission, and food protection, with regard to aesthetic, legal, economic, technical, and political constraints. This course is acceptable as an Engineering Social Science and Humanities Elective and is open to non-engineering students.

**ENV 4111 AIR POLLUTION CONTROL** (3)

PR: EGM 3354C. Behavior and effects of atmospheric contaminants and the principles of making measurements in the air environment. Basic concepts of meteorology and control technology are discussed. Regulatory aspects and air pollution standards are covered.

**ENV 4402 ENVIRONMENTAL ENGINEERING LABORATORY** (1)

PR: ENV 4417. Laboratory experience in the measuring of environmental parameters.

**ENV 4417 WATER QUALITY AND TREATMENT** (3)

PR: EGM 4816. An introduction to municipal water supply and wastewater treatment. Topics include water requirements and waste volumes, water quality, physical and chemical treatment processes, and advanced wastewater treatment processes.

**ENV 4622 WATER RESOURCES ENGINEERING** (3)

PR: EGM 4816. A study of the engineering principles involved in sustaining and managing the quantity and quality of water available for human activities with particular emphasis on surface water and ground water hydrology.

**SUR 3101C ENGINEERING LAND SURVEYING** (2)

Principles of land surveying for engineering practice. Traverses, levels, boundary surveys, route surveys, coordinate geometry, and mapping.

**TTE 4004 TRANSPORTATION ENGINEERING I** (3)

PR: MAP 4302. Introduction to transportation engineering, including urban transportation planning, traffic control and highway design.

**TTE 4006 TRANSPORTATION ENGINEERING II** (3)

PR: TTE 4004. The planning and design of transportation systems.

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**GRADUATE COURSES**

**CES 5335 OPTIMIZATION TECHNIQUES IN CIVIL ENGINEERING** (3)

PR: CI. Theory and application of optimization techniques to the planning, design and operation of Civil Engineering systems.

**EAS 5100 AERODYNAMICS** (3)

PR: EGM 3355, and CI. Fundamentals of aerodynamic flow and flight including potential theory, circulatory theory, viscosity considerations, wing theory and design.

**EGM 5352 FINITE ELEMENT METHODS I** (3)

PR: CI. Finite element methods in continuum mechanics with applications to solid and fluid mechanics problems.

**EGM 5353 FINITE ELEMENT METHODS II** (3)


**EGM 5562 MECHANICS OF COMPOSITE MATERIALS** (3)

PR: CES 4001. Physical and mathematical mode is for composites. Response to thermal, electrical and mechanical loading. Special composite systems and shapes, filamentary plates, shells, sotnesoid domes.

**EGM 5611 CONTINUUM I** (3)

PR: EGM 5611. Theory of thermoelastic and viscoelastic behavior in continuous media; coupled thermodynamics and mechanical behavior; generalized constitutive relations.

**EGM 5614 ADVANCED FLUID MECHANICS** (3)

PR: EGM 4816. Formulation and analysis of problems in the flow of viscous and nonviscous fluids including Newtonian and Non-Newtonian flows. Mathematical methods and techniques of solutions.

**EMA 5644 ENGINEERING CERAMICS** (3)

PR: EGM 3365L and CI. Detailed examination of the materials of ceramic engineering and the engineering properties of advanced ceramic products.

**CES 6217 STRUCTURAL STABILITY** (3)

PR: CES 4002, CES 4208. Elastic and inelastic stability of trusses and frames, local buckling of structural members and plates.

**CES 6508 ADVANCED STRUCTURAL DESIGN I** (3)

PR: CES 4002, CES 4401. A study of design of complicated structural systems such as curved bridges, orthotropic bridges, tall buildings, towers, suspension structures.

**CES 6509 ADVANCED STRUCTURAL DESIGN II** (3)

PR: CES 6508. A study of design of complicated structural systems such as curved bridges, orthotropic bridges, tall buildings, towers, suspension structures.

**CES 6915 DIRECTED RESEARCH** (1-9)

PR: GR. Master's level. Repeatable. (S/U only.)

**CES 6938 GRADUATE INSTRUCTION METHODS** (1-5)

Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

**CES 6939 GRADUATE RESEARCH METHODS** (1-5)

Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

**ECI 6206 COASTAL WAVES AND STRUCTURES** (3)

PR: CI. A study of the fundamentals of wave motion and the mutual interaction of waves and structures. A design project is included.

**ECI 6207 WAVES AND BEACH PROTECTION** (3)

PR: ECI 6206. A study of the fundamentals of shoreline dynamics including distribution of wave energy, motion of beach sand, stable configurations and protective measures.

**ECI 6208 COASTAL AND ESTUARY MODELING** (3)

PR: CI. Digital Modeling of coastal and estuary systems, currents, tide heights, sediment transport, erosion, data collection, temperature distribution, sources and sinks. Special emphasis on Florida regions.

**ECI 6239 FREE SURFACE FLOW** (3)

PR: EGM 4816 or CI. Fundamental and applied aspects of free surface flow, including river hydraulics, canal flow, and open channel design. Lecture.

**ECI 6631 HYDROLOGIC MODELS** (3)

A study of the theoretical principles of hydrologic modeling and an examination of various numerical hydrologic models available. Students will be required to develop and apply computer models.

**ECI 6632 URBAN HYDROLOGY** (3)

PR: CI. A study of the quantity and quality problems and solution techniques associated with urban runoff.

**ECI 6933 SPECIAL TOPICS IN CIVIL ENGINEERING AND MECHANICS** (1-4)

PR: CC

**ECI 6939 CIVIL ENGINEERING AND MECHANICS SEMINAR** (1-4)

PR: CC

**ECI 6971 THESIS: MASTER'S** (var.)

Repeatable. (S/U only.)
EES 6203 WATER QUALITY FOR ENGINEERS (3)  PR: CI. An introduction to the form, structure, and biochemical activities of the important microorganisms which are essential to biological treatment processes for agricultural domestic, and industrial wastewater.

EGM 6136 ADVANCED X-RAY METHODS (3)  PR: CI. X-Ray diffraction, analytical and experimental studies of defects, texture, residual stress, crystal and polycrystalline aggregates. Lec.-lab.

EGM 6261 ADVANCED DYNAMICS (3)  PR: EGM 4340, EGM 5352. Elastic and plastic stress wave propagation in solids, experimental and theoretical treatment method of characteristics, use of finite element programs to solve multiple degree of freedom systems.

EGM 6343 NUMERICAL METHODS IN ENGINEERING ANALYSIS (3)  PR: EGN 4422. Application of computational and mathematical techniques and principles to advanced engineering problems.

EGM 6656 THEORY OF ELASTICITY (3)  PR: CI. Classical and contemporary elasticity theory with applications to engineering problems.

EGM 6675 THEORY OF PLASTICITY (3)  PR: CI. A study of the theory of plasticity including initial and subsequent yield surfaces, incremental and deformation theories.

EGM 6796 PLATES AND SHELLS (3)  PR: CES 4001, and CI. Elastic behavior of thin plate and shell structures.

EMA 6236 DISLOCATION STRUCTURES AND PROPERTIES OF ENGINEERING MATERIALS (3)  PR: EMA 4324. Dislocation interactions and structures, nucleation and growth in metals, principles of phase transformations and a study of the primary strengthening mechanisms in metals.

EMA 6907 INDEPENDENT STUDY (var.)  PR: CC. Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

ENV 6439 URBAN WATER TREATMENT THEORY AND DESIGN (3)  PR: ENV 4417 and CI. A study of the theory of water treatment and the relation of theory to analysis and design practice. Emphasis is given to unit processes. The course is devoted to the design and analysis of specific water treatment facilities.

ENV 6539 URBAN WASTEWATER TREATMENT THEORY AND DESIGN (3)  PR: ENV 4417, CI. A study of the theory of wastewater and the relation of theory to analysis and design practice. Emphasis is given to unit processes. The course is devoted to the design and analysis of specific wastewater treatment works.

ENV 6645 WATER RESOURCES SYSTEMS (3)  PR: ENV 4622, CES 5335. The planning, design, and operation of water resources systems by the use of systems analysis and operations research techniques.

ENV 6607 ENVIRONMENTAL PLANNING (3)  PR: CI. Study of comprehensive application to environmental control and protection techniques to the problems of environmental quality. Important aspects include air and water quality, amenities, waste management, land use practice, control of noise, and natural ecological factors. A design or analysis problem is an integral part of the course.

CED 7915 DIRECTED RESEARCH (var.)  PR: GR. Ph.D. level. Repeatable. (S/U only.)

ECI 7980 DISSERTATION: DOCTORAL (var.)  PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

COMPUTER SCIENCE AND ENGINEERING

UNDERGRADUATE COURSES

CAP 4621 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (3)  PR: EEL 4851C. Basic concepts, tools and techniques used to produce and study intelligent behavior. Organizing knowledge, exploiting constraints, searching spaces, understanding natural languages, problem solving strategies, etc.

CDA 4101 COMPUTER ORGANIZATION AND ARCHITECTURE (3)  PR: COT 3001, EEL 4705. Elements of computer systems; processors, memories and switches. Register transfer representation of a computer. ALUs and their implementation. The control unit. Memory and I/O. Hardware support of operating system functions. Multiprocessor systems. Economic considerations.

CDA 4711 MINICOMPUTER LABORATORY (1)  CR: CDA 4101. Minicomputer organization and programming.

CDA 4905 INDEPENDENT STUDY IN COMPUTER SCIENCE (1-5)  PR: CI. Specialized independent study determined by the needs and interests of the student. May be repeated up to 10 credit hours. (S/U only.)

CIS 4321 DATA PROCESSING APPLICATIONS (3)  PR: EEL 4850C, EEL 4851C. An introduction to the principles of information processing and applications. Fundamentals of systems for management and control.

CIS 4911 COMPUTER SCIENCE PROJECT (2)  Projects intended to develop individual interests and abilities in computer science involving either computer hardware or software aspects of a well defined proposal.

COC 4935 SPECIAL TOPICS IN COMPUTER SCIENCE (1)  PR: CC.

COP 2170 PROGRAMMING IN BASIC (CAI) (1)  Laboratory course in theory and applications of BASIC interactive programming language using a minicomputer and CAI instruction.

COP 3150 PROGRAMMING IN APL (CAI) (2)  PR: MAC 1104, MAC 1114. Laboratory course in fundamental theory and applications of APL programming language using a minicomputer and CAI learning technique.

COP 3510 INTRODUCTION TO COMPUTER SCIENCE (3)  PR: MAC 1104, CR: COP 3510L. Introduction to the concepts of algorithmic formulation of problems for computer solution and the general abstract operations used in these formulations.

COP 3510L COMPUTER SCIENCE LABORATORY (1)  CR: COP 3510. Laboratory for implementation of algorithms in a general purpose computer language.

COP 4400 COMPUTER SYSTEMS (3)  PR: EGN 2210, MAC 3283 or CC. Principles of computer organization, machine and assembly language programming.

COP 4502 COMPARISON OF PROGRAMMING LANGUAGES (3)  PR: EEL 4850C, EEL 4851C. A comparative study of procedural and nonprocedural computer languages, emphasizing the fundamental differences in information binding, string and data structures manipulations, control and I/O structures in different languages.

COP 4550 PROGRAMMING LANGUAGES (3)  PR: EEL 4851C. An introduction to programming languages, survey of language types and the design of translators and interpreters.

COP 4620 INTRODUCTION TO SYSTEMS PROGRAMMING (3)  PR: EEL 4851C, COP 4400. Introduction to systems programming. Design of operating systems. Concurrent processing, synchronization, and storage management policies.

COT 3001 INTRODUCTION TO DISCRETE STRUCTURES (3)  PR: MAC 3281 or equivalent. Introduction to set algebra, propositional calculus and finite algebraic structures as they apply to computer systems.

COT 4125 INTRODUCTION TO AUTOMATA THEORY AND FORMAL LANGUAGES (3)  PR: EEL 4851C, COT 3001. Introduction to the theory and application of various types of computing devices and the languages they recognize.

COT 4130 SEQUENTIAL CIRCUITS (3)  PR: EEL 4705, COT 3001. Digital circuits with feedback.
Synthesis of clocked mode sequential circuits. Fundamental mode circuits. Relations between languages and automata.

COT 4315 ANALYSIS OF ALGORITHMS (3)
PR: EEL 4851C. Design principles and analysis techniques applicable to various classes of computer algorithms frequently used in practice.

EEL 4705 LOGIC DESIGN (3)
PR: EGN 3374. Students for whom this course is not required by their major may enroll with CC. Binary number systems; truth functions; Boolean algebra; canonical forms; minimization of combinational logic circuits; logic circuits in computers.

EEL 4705L LOGIC LABORATORY (1)
CR: EEL 4705.

EEL 4706 TESTING AND FAULT TOLERANCE IN DIGITAL SYSTEMS (3)
PR: COP 4400, COT 4130, or CC. Test generation for combinational and sequential digital circuits, fault analysis and diagnosis. Methods for reliability improvement through fault tolerant and testable circuit design. Introduction to software reliability.

EEL 4743L MICROPROCESSOR LABORATORY (1)
CR: EEL 4757. Laboratory for Microprocessor use and evaluation.

EEL 4757 MICROPROCESSOR PRINCIPLES AND APPLICATIONS (3)
PR: CDA 4101 or equivalent. CR: EEL 4743L. Functional Description, Arithmetic and Logic capabilities, Control and Timing, Interrupts and priority systems, Software design and documentation. Distributed function processing.

EEL 4758 MICROPROCESSOR-BASED SYSTEM DESIGN AND APPLICATION (3)
PR: EEL 4757, EEL 4743L. Study of techniques for design of microprocessor-based systems used in various applications. Includes a project on development of an experimental application system.

EEL 4850C PROGRAMMING METHODOLOGY (3)
PR: Senior standing in Computer Science or CC: COP 3510. Methods of designing and developing effective and efficient computer programs. Top-down design, structured programming, debugging and program analysis are addressed.

EEL 4851C DATA STRUCTURES (3)
PR: COP 3510. Fundamentals of data organization for purposes of program efficiency, clarity and simplicity will be discussed.

EEL 4852C DATA BASE SYSTEMS (3)
PR: COP 4400. Fundamentals of data base management systems. CODASYL, network, hierarchical, and relational data base systems are analyzed, and typical applications are presented.

EEL 4853C DISTRIBUTED PROCESSING AND COMPUTER NETWORKS (3)
PR: COP 4620, CDA 4101. Design and analysis of distributed processing systems. Covers communication hardware and software, network operating systems, and reliability enhancement techniques.

GRADUATE COURSES

CDA 6907 INDEPENDENT STUDY (var.)
PR: Graduate standing. Independent study in which students must have a contract with an instructor. (S/U only)

CDA 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only)

CDA 6911 GRADUATE RESEARCH METHODS (1-4)
PR: Graduate standing. Special course to train graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credits per student. (S/U only)

CDA 6930 SPECIAL TOPICS IN COMPUTER SCIENCE AND ENGINEERING (1-5)
PR: CC

CDA 6940 GRADUATE INSTRUCTION METHODS (1-4)
PR: Graduate standing. Special course to train graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credits per student. (S/U only)

CDA 6971 THESIS: MASTERS (var.)
PR: Graduate standing.

CDA 7910 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only)

CDA 7980 DISSERTATION: DOCTORAL (var.)
PR: Admission to doctoral candidacy. Repeatable. (S/U only)

COP 5001 TOPICS IN COMPUTERS AND PROGRAMMING (4)
PR: CC. Survey of topics in machine organization systems programming, and data structures.

COP 6613 OPERATING SYSTEMS (3)
PR: CC. Operating systems functions and design, resource management, protection systems, process communication and deadlocks.

COP 6640 PROGRAMMING LANGUAGES AND TRANSLATION (3)
PR: CC. Grammars and languages, symbols, strings, syntax, parsing, the design of a compiler, storage organization and symbol tables, translator writing systems.

EEL 5771 INTRODUCTION TO COMPUTER GRAPHICS I (3)
PR: CC. An introduction to the evolution of computer graphics including point-plotting, line drawing, two-dimensional transformations and graphics software packages.

EEL 6522 INFORMATION THEORY (2)
PR: CC. Concepts of information, information channels, channel capacity, information sources and Shannon's fundamental theorem.

EEL 6773 THREE-DIMENSIONAL GRAPHICS AND SYSTEMS (3)
PR: EEL 5771 or CC. Advanced course covers the methods of representation of three dimensional objects in the plane of the graphics screen and the hardware and software required for their processing.

EEL 6764 PRINCIPLES OF COMPUTER ARCHITECTURE (3)
PR: EEL 5711 or CC. Study of the number systems and the algorithms used for digital arithmetic computation with emphasis in their implementation, speed and reliability considerations.

EEL 6766 ADVANCED COMPUTER ARCHITECTURE (3)
PR: EEL 6764 or EEL 6765 or CC. The macro-structure of computers is considered in this course, ranging from the orthodox von Neumann design to multiprocessors, stack processors, pipeline systems, and associative computers.

EEL 6830 CODING THEORY I (2)
PR: CC. Error-correcting codes, algebraic block codes, linear codes and feedback shift registers. BCH codes and decoding methods.

EEL 6831 CODING THEORY II (2)

EEL 6840 AUTOMATA THEORY I (2)

EEL 6841 AUTOMATA THEORY II (2)
PR: EEL 6840. Vector spaces over finite fields, linear sequential circuits, pseudo-random sequences. Turing machines, recursive function; computability.

EEL 6842 AUTOMATA THEORY III (2)
PR: EEL 6841. Artificial languages, phase-structure grammars, operations on languages, decision problems, discrete value random processes, Markov processes, probabilistic sequential machines, nondeterministic sequential machines.

ESI 6198 CASE STUDIES IN INDUSTRIAL COMPUTER SYSTEMS (2)
PR: CC. A case study approach to the definition and implementation of industrial computer systems. The role of automation within the industrial concern. Design of systems in inventory, production control, and related areas. Directing the computer function and systems development.
ELECTRICAL ENGINEERING

UNDERGRADUATE COURSES

EEL 3100 NETWORK ANALYSIS AND DESIGN (3)

EEL 3302 ELECTRONICS (3)
PR: EGN 3373. A course in the physical principles of electronic devices with emphasis on semiconductor electronics. Includes the analysis and design of amplifiers and switching circuits.

EEL 3410, 4411 FIELDS AND WAVES I, II (2,2)
PR: EGN 4421, PHY 3042, PHY 3042L. A basic introduction to electromagnetic field theory, including static and dynamic electromagnetic fields.

EEL 4102 LINEAR SYSTEMS ANALYSIS (3)
PR: EEL 3100. Provides further study in the analysis of linear networks and systems. Includes time and frequency domain points of view. Laplace, Fourier and superposition integrals.

EEL 4108 DISTRIBUTED NETWORKS (3)
PR: EEL 3410, EEL 3100. Transmission lines, standing waves, impedance, waveguides.

EEL 4163 COMPUTER AIDED DESIGN AND ANALYSIS (2)
PR: EEL 3302. The emphasis is upon applications and how to use the major CADA programs as effective tools to solve a wide variety of engineering problems. The coverage includes solid state design, systems analysis, digital logic, transfer function solutions and concludes with a brief look at thermal and mechanical systems analysis. The programs used include SUPER*SCEPTRE, SPICE 2, NASA P and others.

EEL 4220, 4222 ELECTROMECHANICS I, II (3,3)

EEL 4300 COMMUNICATION CIRCUITS (3)
PR: EEL 3302. Provides further study in electronic circuits. Includes oscillator, modulator, and detector analysis and design.

EEL 4330 MICROELECTRONICS ENGINEERING (3)

EEL 4411 See EEL 3410.

EEL 4511 COMMUNICATION ENGINEERING (2)
PR: EEL 4300. System considerations of electronic circuits; radio propagation; antennas; transmitters and receivers.

EEL 4511L COMMUNICATIONS LABORATORY (1)
CR: EEL 4511. Experiments in amplitude modulation, frequency modulation, pulse communications, and data transmission.

EEL 4656 LINEAR CONTROL SYSTEMS (3)
PR: EEL 3302. Introduction to analysis and design of linear feedback control systems. Covers block diagram, flow charts, Bode, Nyquist, and root locus techniques.

EEL 4705 LOGIC DESIGN (3)
PR: EGN 3373. Non-majors may enroll with CC. Binary number system; truth functions; Boolean algebra; canonical forms; minimization of combinational logic circuits; logic circuits in computers.

EEL 4705L LOGIC LABORATORY (1)
CR: EEL 4705.

EEL 4905 INDEPENDENT STUDY (1-5)
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. (S/U only.)

EEL 4906 DESIGN PROJECT (2)
PR: Senior standing. An individual or team project involving the design of an electrical component system. Required of all electrical seniors.

EEL 4935, 4936, 4937 SPECIAL ELECTRICAL TOPICS I, II, III (1-4 each)
PR: CC.

ELR 3301 LABORATORY 1 (1)
PR: EGN 3373

ELR 3302L LABORATORY 2 (1)
PR: EGN 3373

ELR 4114 ELECTRICAL MEASUREMENTS (2)
PR: EEL 3100. Techniques and principles of electronic measurement.

ELR 4305L LABORATORY 3 (1)
PR: ELR 3302L CR: EEL 4300

ELR 4306L LABORATORY 4 (1)
PR: ELR 3302L CR: EEL 4411

GRADUATE COURSES

EEL 5250 POWER SYSTEMS ANALYSIS (2)
PR: CC. Analysis techniques for AC power systems.

EEL 5253 COMPUTER ANALYSIS OF POWER SYSTEMS (2)
PR: CC. Review of Fortran programming, matrix algebra, network formulation, short circuit studies, simulation of algebraic equations, load flow studies, numerical solution of differential equations, transient stability studies. Strong emphasis on techniques adaptable to digital computer studies, programs will be written and run on the IBM 360/65.

EEL 5367 PULSE CIRCUIT PRINCIPLES (2)
PR: EEL 4102, EEL 4300. An introduction to the analysis and design of pulse and timing circuits with applications.

EEL 5435 UHF PRINCIPLES (2)
PR: EEL 4102, EEL 4300, EEL 4411. A study of tubes, devices, and circuits peculiar to systems which operate at ultra high and super high frequencies.

EEL 5435L UHF LABORATORY (1)
CR: EEL 5435

EEL 5620 NONLINEAR CONTROL SYSTEMS (2)

EEL 5711 DIGITAL COMPUTERS (3)
PR: EEL 4705. Digital arithmetic; computer subsystems, arithmetic units; control units; memory units; general purpose computers.

EEL 5711L DIGITAL LABORATORY CR: EEL 5711

EEL 5755 DIGITAL SIGNAL PROCESSING TECHNIQUES (2)

EEL 5760 DISCRETE STRUCTURES FOR DIGITAL SYSTEMS (2)

EEL 5820 IMAGE PROCESSING BY COMPUTERS (2)
PR: EEL 4102 or CC. Two dimensional convolution and system functions. Fourier transform in two dimensions. Digitization of two dimensional signals, sampling theorems, bandlimited signals. Image processing by computers. Applications of image processing.

EEL 5935, 5936, 5937 SPECIAL ELECTRICAL TOPICS I, II, III (1-3 each)
PR: CC.

EEL 6141, 6142, 6143 NETWORKS SYNTHESIS I, II, III (2-2-2)
PR: CC. Network functions; physical realizability; two terminal network synthesis methods; frequency transformation; potential analogy; approximation problems; insertion-loss and transfer function synthesis.

EEL 6150, 6151 ADVANCED CIRCUIT THEORY I, II (2,2)
PR: CC. Network fundamentals; network characterization; frequency analysis; superposition integrals; signal-flow techniques; stability problems; real-and-imaginary relations.
EEL 6152 NONLINEAR CIRCUITS
PR: CC. Analytical and topological approaches to nonlinear circuits; nonlinear resonance; relaxation oscillations.

EEL 6168 CADA: MODELING & SOFTWARE
PR: EEL 4163. Coverage includes all facets of solid-state modeling pertaining to CADA applications. Discrete and macro modeling techniques are explored for a wide range of devices. Software methods for CADA applications are discussed from several vantage points. Methodology and treatment required for large scale, general purpose programs are explored. The mathematical techniques used for the modern integration routines are examined, with tradeoffs discussed.

EEL 6174 OPTIMUM FILTERING AND IDENTIFICATION
PR: CC or EEL 6631. Estimation theory and development of the Kalman-Wiener filters for continuous and discrete-time systems. System identification through deterministic and stochastic approaches. Application to control and communication systems.

EEL 6261, 6262, 6263 ELECTRIC POWER SYSTEMS I, II, III
PR: CC Steady-state and transient analysis of interconnected power systems; power circuit protection; transient characteristic of apparatus.

EEL 6270 LIGHTNING AND SURGE PROTECTION
PR: CC. Methods of protection against overvoltage due to lightning. Ground wire shielding, systems and tower grounding, lightning arresters. Dynamic overvoltage, switching phenomena and system recovery voltages.

EEL 6271 PROTECTIVE RELAYING OF POWER SYSTEMS
PR: EEL 5250, EEL 6261 or CC. Fundamentals of instrumentation. Design and operation of protective schemes for equipment in generation, transmission, and distribution circuits. Analysis of abnormal system conditions requiring relay operation.

EEL 6332 ELECTRICAL PROPERTIES OF THIN FILMS(2)
PR: EEL 4330 or equivalent and EEL 4411 or CC. Electrical properties of thin films as derived from Boltzmann's transport equation. The growth of thin films. The fabrication of electrical circuits with thin films. Lecture supplemented by laboratory experiments and demonstrations.

EEL 6351, 6352, 6353 SOLID STATE ELECTRONICS I, II, III
PR: CC. Theory of operation and application of circuits and devices.

EEL 6386, 6389 PRINCIPLES OF SEMICONDUCTOR DEVICE MODELING I, II
PR: EEL 4102, EEL 4411. A course sequence which emphasizes systematic methods of obtaining models which relate device physics to terminal behavior and which provide appropriate compromises between accuracy and simplicity.

EEL 6387 NOISE THEORY
PR: CC. Electrical noise and signals through linear filters and electronic systems.

EEL 6432 MICROWAVE COMPONENTS
PR: CC. A study of directional couplers, junctions, cavities and other passive microwave components including microwave integrated circuits.

EEL 6433 MICROWAVE NETWORKS
PR: CC. Scattering and transfer representation of n-ports. Odd and even mode theory. Wave filters.

EEL 6434 MICROWAVE GENERATION AND AMPLIFICATION

EEL 6482, 6483, 6484 ELECTROMAGNETIC FIELDS AND WAVES I, II, III
PR: CC. Electromagnetic theory from the engineering point of view, propagation and reflection of waves, guided waves, resonant cavities, antennas and radiation.

EEL 6506 DATA TRANSMISSION
PR: EEL 6508. Quantization theory, binary coding systems ideal binary transmission, on-off keying, FSK, PSK, PCM applications.

EEL 6507 DATA TRANSMISSION II
PR: EEL 6506. M-ary systems-MASK, MFSK, MPSK, orthogonal systems, multilevel and multistate coding, simplex coding, orthogonal and biohologramic codes, polysignal systems, synchronization methods.

EEL 6508 PULSE COMMUNICATIONS SYSTEMS
PR: CC. Sampling theory, pulse waveform generation and modulation. PAM, PWM, PPM, related multiplex systems, telemetry applications.

EEL 6522 INFORMATION THEORY
PR: CC. Concepts of information, information channels, channel capacity, information sources and Shannon's fundamental theorem.

EEL 6531, 6532, 6533 THEORY OF COMMUNICATION I, II, III
PR: CC. Physical basis and statistical representation of electrical noise; filtering, modulation, and de-modulation of signals corrupted by noise; correlation techniques and linear prediction; statistical estimation of signal parameter; optimum filters and receivers; ambiguity functions and inverse probability; quantitative measure of information sources, noise channels and channel capacity; an introduction to error-correcting codes.

EEL 6613 MODERN CONTROL THEORY
PR: EEL 4656, EEL 5620, EEL 6631, EEL 6640 or CC. A study of modern control techniques including optimum and adaptive control.

EEL 6631 DIGITAL CONTROL SYSTEMS

EEL 6640 RANDOM PROCESSES IN CONTROL SYSTEMS
PR: EEL 4656. Analysis and design of control systems subject to random inputs and disturbances.

EEL 6756 SPECIAL ANALYSIS BY COMPUTERS
PR: CC. Introduction to time series analysis by computers. Discrete Fourier methods applied to time series, sample spectrum, cross spectrum, smoothing of spectral estimators, distribution properties. Application to physical, biological and environmental problems.

EEL 6822 PATTERN RECOGNITION THEORY

EEL 6823 COMPUTER APPROACHES TO PATTERN RECOGNITION

EEL 6830 CODING THEORY I
PR: CC. Error-correcting codes, algebraic block codes, linear codes and feedback shift registers. BCH codes and decoding methods.

EEL 6831 CODING THEORY II

EEL 6840 AUTOMATA THEORY I

EEL 6841 AUTOMATA THEORY II

EEL 6842 AUTOMATA THEORY III
PR: EEL 6841. Artificial languages, phase-structure grammars, operations on languages, decision problems, discrete value random processes, Markov processes, probabilistic sequential machines, non-deterministic sequential machines.

EEL 6908 INDEPENDENT STUDY
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

EEL 6932 ADVANCED ENGINEERING SEMINAR
PR: CC.
EEL 6935 SELECTED ELECTRICAL TOPICS (1-3)
PR: CC.

EEL 6936 SPECIAL ELECTRICAL PROBLEMS (1-3)
PR: CC.

EEL 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

EEL 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

ELR 6118 MEASUREMENTS (2)
PR: CC. Advanced techniques and principles of electronic measurement.

ELR 6117 ELECTRICAL MEASUREMENTS (2)
PR: CC. Advanced techniques and principles of electronic measurement.

ELR 6118 MEASUREMENTS LABORATORY (1)
CR: ELR 6117

ELR 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ELR 6911 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit. Limited to a cumulative total of 5 credits per student. (S/U only.)

ELR 6940 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

ELR 7910 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

ENGINEERING TECHNOLOGY UNDERGRADUATE COURSES

ETG 4931 SPECIAL TOPICS IN TECHNOLOGY I (1-5)
PR: CC.

ETG 4932 SPECIAL TOPICS IN TECHNOLOGY II (1-5)
PR: CC.

ETG 4933 SPECIAL TOPICS IN TECHNOLOGY III (1-5)
PR: CC.

ETI 4600 INTRODUCTION TO INDUSTRIAL SYSTEMS (3)
PR: ETK classification or CC. Introduction to organizational planning and control functions in industrial systems.

ETI 4614 PRINCIPLES OF INDUSTRIAL OPERATIONS I (4)
PR: ETK classification or CC. Techniques of work measurement and methods design; principles of production control and inventory control.

ETI 4661 PRINCIPLES OF INDUSTRIAL OPERATIONS II (3)
PR: ETI 4600, ETI 4614, or CC. Application of techniques developed to the operation of an industrial firm through special projects.

GRADUATE COURSES

ETE 5100 INTRODUCTION TO ELECTRONICS FOR SCIENTISTS (5)
Basic electronic devices and instruments, DC and AC circuits, diodes and power supplies, transistor, circuits, integrated circuits, laboratory instruments, transducers and special instruments. No credit toward graduate degree requirements.

ETG 6931 SPECIAL TECHNICAL TOPICS I (1-4)
PR: CC.

ETG 6932 SPECIAL TECHNICAL TOPICS II (1-4)
PR: CC.

ETG 6933 SPECIAL TECHNICAL TOPICS III (1-4)
PR: CC.

INDUSTRIAL AND MANAGEMENT SYSTEMS UNDERGRADUATE COURSES

EIN 4214 SAFETY ENGINEERING (3)
Industrial safety practices. Application of hazard reduction or hazard reduction or elimination techniques. Achievement of safety and health goals. OSHA, NIOSH. Design of loss control program.

EIN 4301 AUTOMATION FOR INDUSTRIAL ENGINEERS (3)
PR: EIN 4304C, EIN 4312, EGN 3613. Introduction to the practices and concepts of automation as applied to material handling, inventory storage, material transfer, industrial processes and quality control. Economic justification of automated activities.

EIN 4304C INTRODUCTION TO INDUSTRIAL ENGINEERING & INDUSTRIAL PROCESSES (3)
History of industrial engineering. Introduction to basic industrial processes and controls. Students research specific industries and visit local industrial plants.

EIN 4312L PRODUCTION DESIGN I (3)
Operation analysis and workplace design. Work measurement including stopwatch time study, work sampling, standard data and production studies.

EIN 4313L PRODUCTION DESIGN II (3)
PR: EIN 4312L. Predetermined time systems. Job analysis and evaluation, wage administration. Design and application of wage incentive plans.

EIN 4334 PRODUCTION CONTROL I (3)

EIN 4335 PRODUCTION CONTROL II (3)

EIN 4352 ENGINEERING ECONOMY II (2)
PR: EGN 3613 or equivalent. Analysis of economic limitations on engineering projects. Income tax considerations, replacement models, MAPI, and obsolescence.

EIN 4364L PLANT FACILITIES DESIGN (4)
PR: EIN 4313L. Design and modification of industrial production and material handling facilities. Basic analysis techniques, use of computer programs, automated warehousing.

ESI 3211 INDUSTRIAL STATISTICS (3)
PR: ETK classification. Industrial applications of probability, testing of hypotheses, regression techniques and analysis of variance. (No credit for engineering majors.)

ESI 4221 STATISTICAL QUALITY CONTROL (3)

ESI 4244 DESIGN OF EXPERIMENTS I (3)
PR: EGN 3443. Development of the basic statistical experimental designs applicable to engineering analyses. Analysis of variance and regression.

EIS 4314 OPERATIONS RESEARCH I (3)
PR: EGN 4450. An introduction to operations research techniques with particular emphasis on deterministic models. Linear programming, dynamic programming, goal programming, integer programming, and PERT/CPM networks are considered.

EIS 4315 OPERATIONS RESEARCH II (3)
PR: EGN 3443, ESI 4314. A continuation of ESI 4314 with emphasis given to probabilistic models in Operations Research. Discrete and continuous time processes, queueing models, inventory models, simulation models, Markovian decision processes and decision analysis.

EIS 4316 SYSTEMS ANALYSIS AND DESIGN (3)
PR: ESI 4315, EIN 4313L. The definition and analysis of systems. Students are introduced to systems analysis through projects with local industries.

ESI 4521 COMPUTER SIMULATION (3)
PR: EGN 2210, EGN 3443. Use of the GPSS language. Design of simulation experiments. Introduction to computer simulation of
real world systems. Analysis and evaluation of simulation model output. Introduction to the Simscript and SLAM languages.

**ESI 4573 NUMERICAL METHODS**
PR: (3) PR: EGN 2210, one calculus course or CI. Numerical algorithms and methods for applications to engineering problems. Applications using FORTRAN language.

**ESI 4905 INDEPENDENT STUDY**
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. (S/U only.)

**GRADUATE COURSES**

**EIN 5101 ARBITRATION OF INDUSTRIAL ENGINEERING DISPUTES**
PR: (3) PR: CC. Case studies in the arbitration of technical disputes involving job evaluation and classification, labor standards, wage incentives, crew size, etc.

**EIN 5218 HAZARDS CONTROL ENGINEERING**
PR: Senior or graduate status. Open to non-majors. Nature of industrial accidents. Practices, standards, OSHA, and other governmental requirements for reducing accident frequency and severity in the industrial environment. Design measures for the prevention of health impairment due to non-accidental causes.

**EIN 5245 HUMAN FACTORS**
PR: CC. A study of the human physiological limitations encountered in the design, analysis and evaluation of man-machine systems.

**EIN 5301 INDUSTRIAL ENGINEERING CONCEPTS**
PR: CC. Survey of industrial and management engineering methodology. Work measurement, methods, production and inventory control, and facility design.

**EIN 5345 INVENTORY CONTROL**
PR: EIN 4335 or equivalent. Properties of inventory systems and fundamentals of deterministic and probabilistic inventory models. Principles and concepts of material requirements planning.

**EIN 5353 ADVANCED ENGINEERING VALUATION**
PR: EIN 4352 or equivalent. Statistical models for analyzing engineering alternatives from an economic viewpoint. The use of advanced engineering economy concepts in solving industrial problems.

**EIN 5381 LOGISTICS ENGINEERING**
PR: EGN 3443 or equivalent. Principles and practices of Logistics Engineering are covered. System requirements, logistics support analysis, test and evaluation are considered.

**EIN 5386 PROBLEMS AND ENGINEERING MANAGEMENT**
A study of problems encountered by managers in the planning, organizing, allocating of resources, directing, and controlling technical activities.

**EIN 5389 FORECASTING**
Introduction to forecasting techniques used to plan and schedule production and inventory control functions. Smoothing and decomposition time-series methods, regression methods, and autoregressive/moving average methods are presented. Integrating forecasting and planning into the engineering organization is discussed.

**EIN 5914, 5915, 5916 SPECIAL INDUSTRIAL PROJECTS I, II, III**
(1-3 each) PR: CC.

**EIN 6247 MAN/MACHINE SYSTEMS**

**EIN 6336 PRODUCTION CONTROL SYSTEMS**
PR: CC. Forecasting models, development of production plans, loading and scheduling models and basic inventory models. Use of MRP. Design and evaluation of production control systems.

**EIN 6933 ADVANCED ENGINEERING SEMINAR**
(1-3 each) PR: CC.

**EIN 6934, 6935, 6936 SPECIAL INDUSTRIAL TOPICS I, II, III**
(1-3 each) PR: CC.

**EIN 6971 THESIS: MASTER'S**
Repeatability. (S/U only.)

**ESI 5216 ENGINEERING STATISTICS II**
PR: EGN 3443 or Equivalent. Application of non-parametric statistics, sequential analysis, orthogonal polynomials and other advanced statistical techniques to solving engineering problems.

**ESI 5219 STATISTICAL METHODS FOR ENGINEERING MANAGERS**
Study of statistical methods applied to engineering management problems involving estimation and prediction under conditions of uncertainty. Not open to students who have had EGN 3443.

**ESI 5233 RELIABILITY ENGINEERING**

**ESI 5306 OPERATIONS RESEARCH FOR ENGINEERING MANAGEMENT**
Linear programming, non-linear programming, queueing, inventory, network analysis. Not open to students who have had ESI 4315.

**ESI 5522 COMPUTER SIMULATION II**
PR: EGN 4521 or equivalent. Design of discrete and continuous simulation models. Model validation and verification. Statistical analysis of simulation model output.

**ESI 6013 THEORY OF INDUSTRIAL STATISTICS**
PR: ESI 5219 or equivalent. Study of the theory behind the statistical techniques applied to the solving of engineering problems.

**ESI 6223 ECONOMIC QUALITY CONTROL**
PR: EIN 5353, ESI 4221. The design of acceptance sampling systems and control charts from the economic point of view. Consideration of the effects of inspection error on sampling plan and control chart designs.

**ESI 6227 STATISTICAL ASSURANCE PLANS**
ESI 4221 or equivalent. Advanced techniques in quality control systems. Includes study of advanced analysis of variance and control chart designs.

**ESI 6238 THEORY OF RELIABILITY**
PR: EGN 3443 or equivalent. Topics in statistical methodology which have applications in reliability. Discrete and continuous distribution models, reliability estimation, reliability structure and growth models, and statistical design for reliability.

**ESI 6247 STATISTICAL DESIGN MODELS**
PR: ESI 5219 or equivalent. Design of experimental mathematical models. Application of advanced analysis of variance techniques as applied to industrial problems.

**ESI 6291 SPECIAL TOPICS IN STATISTICS**
PR: CC. Special topics in statistics related to research in engineering.

**ESI 6336 QUEUEING THEORY**
PR: ESI 4315. Introduction to queueing models. Poisson queues, non-Poisson queues, decision models, transient analysis and special queueing topics.

**ESI 6341 DYNAMIC PROBABILISTIC SYSTEMS**

**ESI 6405 NONLINEAR AND DYNAMIC PROGRAMMING**
PR: ESI 4315 or equivalent. Optimization of nonlinear systems. General theory and existence theorems. Techniques of solution including quadratic, dynamic and geometric programming for discrete systems, continuous systems and variational methods.

**ESI 6414 LINEAR PROGRAMMING**
PR: ESI 4315 or equivalent. The Simplex method, degeneracy, sensitivity analysis, duality theory, network flow theory. Applications to industrial problems.

**ESI 6421 MULTIVARIABLE OPTIMIZATION**
ESI 6550 INDUSTRIAL SYSTEMS DESIGN (3)
PR: ESI 4521, ESI 4315 or equivalent. Design of integrated systems using statistical and operations research models. Digital simulation using several different digital simulation systems.

ESI 6552 EVALUATION OF SYSTEM PERFORMANCE (3)
PR: ESI 4215, ESI 4315 or equivalent. Applications of probability and random processes to the design and evaluation of physical systems from the viewpoint of satisfying prescribed specifications.

ESI 6906 INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

ESI 6911 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ESI 6991 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

ESI 6992 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

ESI 7911 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

ESI 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

COMPUTER SERVICE COURSES

UNDERGRADUATE COURSES
CDA 3101 SC INTRODUCTION TO COMPUTERS II (3)
PA: COP 3110. Number systems. Internal representation of data and instructions. Algorithms and flowcharting. Introduction to machine and assembler language and higher level languages. (No credit for engineering majors.)

CDA 3102 SC INTRODUCTION TO COMPUTING SCIENCES III (3)
PR: CDA 3101. Continuation of CDA 3101. Introduction to large computer systems assembler language and applications. (No credit for engineering majors.)

COC 3300 SC INTRODUCTION TO COMPUTERS AND PROGRAMMING IN BASIC (3)
An overview of computer systems and their role in society. Survey of the evolution of computer software and hardware technology with emphasis on current applications. Introduction to programming using the BASIC language.

COC 4001 SC MINI-COMPUTER APPLICATIONS (3)
PR: COP 4530. Study of mini-computer system components, I-O devices, theory of computer operation.

COP 3110 SC FORTRAN PROGRAMMING (3)
PR: COP 3300. Solution of scientifically oriented problems using the FORTRAN language. Particular emphasis is placed on file manipulation and system libraries.

COP 3120 SC COBOL PROGRAMMING I (3)

COP 3121 SC COBOL PROGRAMMING II (3)
PR: COP 3120. Advanced applications of ANSI Standard COBOL. Development of subroutines, relative I-O and data base applications as used in a comprehensive data processing environment.

COP 3130 SC PL/I PROGRAMMING (3)

COP 3151 SC APL PROGRAMMING (3)
PR: COP 3300. The use of the APL language is an interactive mode to solve business and scientific programs.

COP 3300 SC GPSS SIMULATION (3)
PR: COP 3110. The development and execution of discrete event simulation models of real world systems using the GPSS language.

COP 3310 SC SIMSCRIPT SIMULATION (3)

COP 3391 SC PASCAL PROGRAMMING (3)
PR: COP 3300. Structured programming implemented with the PASCAL language. Emphasis on program structure and data manipulation.

COP 4202 SC COMPUTER APPLICATIONS (3)
PR: COP 3110. Applications of various high level languages to current scientific and engineering problems.

COP 4530 SC DATA REPRESENTATION AND MANIPULATION (3)
PR: COP 3110. Study of the internal representations of data, data storage and retrieval, and data manipulations.

GRADUATE COURSES
CAP 5812 SC COMPUTERS FOR RESEARCH I (3)
PR: Graduate student status. The use of the FORTRAN language in solving research problems.

CAP 6813 SC COMPUTERS FOR RESEARCH II (3)
PR: CAP 5812 or equivalent. Continuation of the material covered in CAP 5812. Use of computer libraries, plotting equipment and statistical packages.

COLLEGE OF FINE ARTS

ART

UNDERGRADUATE COURSES
ARH 3000 INTRODUCTION TO ART (4)
An expanded introductory treatment of basic concepts. For art majors and non-majors.

ARH 4100 PREHISTORIC AND ANCIENT ART (4)
A comprehensive study of Paleolithic, Neolithic, Egyptian, Assyrian and Mesopotamian painting, sculpture and architecture.

ARH 4170 GREEK AND ROMAN ART (4)
A comprehensive study of Aegean, Mycenaean, Etruscan, Greek and Roman painting, sculpture and architecture.

ARH 4200 MEDIEVAL ART (4)
A comprehensive study of early Christian, Byzantine and Medieval painting, sculpture, architecture and manuscript illumination.

ARH 4301 RENAISSANCE ART (4)
A comprehensive study of Renaissance and Mannerist painting, sculpture and architecture in Italy and Northern Europe.

ARH 4350 BAROQUE AND ROCOCO ART (4)
A comprehensive study of the painting, sculpture and architecture in France, Italy, Spain and the Netherlands in the seventeenth and early eighteenth centuries.

ARH 4430 NINETEENTH CENTURY ART (4)
A comprehensive study of nineteenth century painting, sculpture and architecture in France and England.

ARH 4450 TWENTIETH CENTURY ART (4)
A comprehensive study of painting, sculpture and architecture from Cezanne to the present in Europe and the United States. Required of all art majors.

ARH 4530 ORIENTAL ART (4)
An introduction to concepts of the arts of China, Japan and Other Far Eastern countries.

ARH 4743 INTRODUCTION TO THE PERSONAL FILM (4)
PR: ART 3630C. Comparison of philosophical and technical distinctions between the personal film and theatrical or commercial release.
ART 4746 ANATOMY OF THE COLLABORATIVE FILM
PR: ART 4631C. Analysis of aesthetic and other selected aspects of film produced through collaborative efforts. May be repeated.

ART 4790 SELECTED TOPICS IN THE HISTORY OF FILM
In-depth investigation of a selected period, development, or school in the history of film as art. May be repeated.

ART 4796 CRITICAL STUDIES IN ART HISTORY
PR: CI. Specialized intensive studies in art history. Specific subject matter varies. To be announced at each course offering. May be repeated for different topics only.

ART 4937 SEMINAR IN THE HISTORY OF ART HISTORY
PR: Four courses in Art History at the 4000 level, CI. An examination of the origins of Art History as a discipline and changing models of Art History from Vasari to the present.

ART 2202C VISUAL CONCEPTS I
Studio problems supplemented by reading and discussion. Consideration of spatial organization of the two-dimensional surface.

ART 2203C VISUAL CONCEPTS II
Studio problems supplemented by reading and discussion. Consideration of three-dimensional organization of space and color.

ART 3110C CERAMICS I
PR: Visual Concepts II and Introduction to Art. Intermediate problems in ceramics with emphasis on the exploration of methods and media and the development of individual concepts.

ART 3301C DRAWING I

ART 3420 LITHOGRAPHY I
PR: Visual Concepts I. Introduction to Art and Drawing I. Intermediate problems in lithography with emphasis on the exploration of methods and media and the development of individual concepts.

ART 3470 INTAGLIO I

ART 3510C PAINTING I

ART 3600C PHOTOGRAPHY I
PR: Visual Concepts I and Introduction to Art. Intermediate problems in photography with emphasis on the exploration of materials and media and the development of individual concepts.

ART 3630C CINEMATOGRAPHY I
PR: Visual Concepts I and Introduction to Art. Intermediate problems in cinematography with emphasis on the exploration of materials and media and the development of individual concepts.

ART 3701C SCULPTURE I
PR: Visual Concepts II and Introduction to Art. Intermediate problems in sculpture with emphasis on the exploration of materials and media and the development of individual concepts.

ART 3935 STUDIO TECHNIQUES: SELECTED PROJECTS
PR: Visual Concepts I, II, and Introduction to Art and CI. Concentration in specialized technical data and process. May be repeated for credit for different topics only.

ART 4111C CERAMICS II
PR: ART 3110C. Continued problems in ceramics. May be repeated.

ART 4320C DRAWING II
PR: ART 3301C. Continued problems in drawing. May be repeated.

ART 4421C LITHOGRAPHY II
PR: ART 3420. Continued problems in lithography. May be repeated.

ART 4471C INTAGLIO II
PR: ART 3470. Continued problems in intaglio. May be repeated.

ART 4520C PAINTING II
PR: ART 3510C. Continued problems in painting. May be repeated.

ART 4601C PHOTOGRAPHY II
PR: ART 3600C. Continued problems in photography. May be repeated.

ART 4631C CINEMATOGRAPHY II
PR: ART 3630C. Continued problems in cinematography. May be repeated.

ART 4633C SOUND TECHNIQUES
PR: ART 3630C. The recording and editing of sound for film. Collaboration with other departments, particularly Music and Theatre, is encouraged. To be taken concurrently with ART 4631C or ART 5642C whenever possible.

ART 4702C SCULPTURE II
PR: ART 3701C. Continued problems in sculpture. May be repeated.

ART 4900 DIRECTED READING
PR: CI and CC. A course of reading and study in an area of special concern governed by student demand, instructor interest and/or departmental requirements. Selection of study area and materials for the course must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different study areas only.

ART 4905 DIRECTED STUDY
PR: CC. Independent studies in the various areas of Visual Arts. Course of study and credits must be assigned prior to registration. May be repeated.

ART 4935 ART SENIOR SEMINAR
PR: Senior Status. To aid majors to understand, appraise, and perfect their own art and technique through critical and aesthetic judgments of their colleagues. Discussion and critical evaluation.

GRADUATE COURSES
Admission to all 5000 level studio courses by Consent of Instructor.

ART 6055 ART HISTORY
PR: CI. May be repeated.

ART 5125C CERAMICS
PR: ART 4111C. Advanced problems in the various ceramic techniques, including throwing and glaze calculation. May be repeated.

ART 5340C DRAWING
PR: ART 4320C. Advanced problems in various drawing techniques. Emphasis on individual creative expression. May be repeated.

ART 5422C LITHOGRAPHY
PR: ART 4421C. Advanced problems in various lithographic techniques. Emphasis on individual creative expression. May be repeated.

ART 5472C INTAGLIO
PR: ART 4471C. Investigations into more complex intaglio processes including photoengraving and color printing procedures. Emphasis on personal conceptual development in graphic media. May be repeated.

ART 5532C PAINTING
PR: ART 4520C. Advanced problems in the various painting techniques. Emphasis on individual creative expression. May be repeated.

ART 5642C PHOTOGRAPHY
PR: CI. Advanced work in photography and related media leading to development of personal/expressive statements. May be repeated.

ART 5642C CINEMATOGRAPHY
PR: ART 4631C. Advanced studio work using black and white, color and sound as technical and aesthetic factors in visual, artistic productions. May be repeated.

ART 5730C SCULPTURE
PR: ART 4702C. Advanced problems in the various techniques of sculpture. Emphasis on individual creative expression. May be repeated.
DANCE

UNDERGRADUATE COURSES

DAA 2100 FUNDAMENTALS OF MODERN DANCE I (2)  
To acquaint beginning modern dance students with fundamentals of dance vocabulary, movement, rhythm and alignment.

DAA 2105 FUNDAMENTALS OF BALLET I (2)  
To acquaint beginning ballet dance students with fundamentals of vocabulary, movement, rhythm and alignment.

DAA 2160 MODERN DANCE II (3)  
PR: Admission by audition. Study of principles of modern dance technique. Practical work in exercises and movement phrases, utilizing changing rhythms and dynamics. May be repeated.

DAA 2200 BALLET II (3)  
PR: Admission by audition. Positions and barre exercises. Stress on correct alignment of the body and the application of single and double step combinations in center work. The use of ballet vocabulary (French terms). Material is covered almost totally as practical work in class with a few outside projects. Concert and performance attendance required. May be repeated.

DAA 3161 MODERN DANCE III (3)  
PR: Admission by audition. Continuation of DAA 2160. Further emphasis on style and phrasing. Work in projecting mood and quality by dancing and rehearsing in more advanced student choreography, leading to performance. Rehearsal hours to be arranged. May be repeated.

DAA 3201 BALLET III (3)  
PR: Admission by audition. Continuation of DAA 2200. Intensification of barre exercises for the development of strength and form. Centre exercises to develop quickness of mind/body coordination. Most of the ballet steps are introduced. Application of phrasing and quality of movement. Adagio, pirouettes, and allegro are specifically stressed. Material covered as practical work in class with concerts and performances. Rehearsal hours to be arranged. May be repeated.

DAA 3220 BALLET VARIATIONS (1)  
PR: DAA 3201. This course introduces fundamental exercises for the development of pointe technique. Material covered may also be used for de duex, character, and variations. Must be repeated for a total of 4 hours by majors in ballet concentration. May be repeated.

DAA 3502 JAZZ DANCE (2)  
PR: DAA 3161 or DAA 3201 or CI. A technique class with an emphasis on highly stylized, percussive movement on a strong rhythmic base. Required is the performance of a short dance sequence encompassing these skills. May be repeated.

DAA 3700 CHOREOGRAPHY I (2)  
Study and execution of basic principles of composition. Preparation of studies in theme and variations, breath phrases and metric phrases. May be repeated.

DAA 3701 CHOREOGRAPHY II (2)  
PR: DAA 3700 or CI. Preparation of studies in rhythm, dynamics, form and motivation, culminating in a solo. May be repeated.

DAA 4162 MODERN DANCE IV (4)  
PR: Admission by audition. Continuation of DAA 3161 on an advanced level. Work in individual invention creating an awareness of many possibilities of movement. Intensive work on the growth of personal performance styles as a means of communication. Equal emphasis will be given to training the body in the development of technical excellence. Dancing in student choreography leading to performance. Rehearsal hours to be arranged. Must be repeated for a minimum of 8 hours by the student concentrating in Modern Dance. May be repeated.

DAA 4202 BALLET IV (4)  
PR: Admission by audition. Continuation of DAA 2200. Perfecting the execution of barre work including body alignment, quality of movement, strength, form, quickness of mind and alertness. Intensification of centre work. More stress on aesthetic quality of movement and phrasing. Perfecting the execution of classical ballet technique and a continuing awareness of performing projection and audience communication for those with a professional performing career in mind. Complete background and knowledge of the classical ballet techniques required. Students expected to be proficient in pointe work. Material covered as practical work in class with a few outside projects, concerts, and performances. Rehearsal hours to be arranged. Must be repeated for a minimum of 8 hours by the student concentrating in Ballet. May be repeated.

DAA 4702 CHOREOGRAPHY III (2)  
PR: DAA 3701 or Cl. Work directed toward duets and group dances. The students will submit choreographic ideas for instructor's approval, then proceed with rehearsals. The best dances will be performed and fully produced under supervision of student choreographers. Lab.-lab., reading. May be repeated.

DAA 4703 CHOREOGRAPHY IV (2)  
PR: DAA 4702. The student will prepare studies based on free form, minimal art, and chance methods. Lab.-lab., reading. May be repeated.

DAN 3100 INTRODUCTION TO DANCE (2)  
For non-dance majors, a study of the art of dance. Lecture and activities including Modern, Ballet, Jazz, Ethnic, and Tap. DAN 3100 may be used for University General Distinction Requirement—by the non-major; and may be used to satisfy part of the 6 hour in-College Requirement for Fine Arts Majors in Art, Music and Theatre.
DAN 3590 PRACTICUM IN DANCE PRODUCTION I (1-4)
A practicum in mounting dance concerts with shop work and backstage participation. Intended for students working in costuming, set preparation, light presentation, stage management and production crewing. Dance majors must have at least 2 credits for graduation accumulated in two different semesters.

DAN 3603 MUSIC FOR DANCE (2)
Development of practical music skills in relation to dance. Emphasis on rhythm and the relationship of music forms to dance. May be repeated up to 4 credit hours.

DAN 3710 REPERTORY (1)
The development and performance of solo and/or group dances. Open to all University students by audition. May be repeated.

DAN 4120 SURVEY HISTORY OF DANCE (3)
Survey history of dance. Study of development of dance from its inception through 18th Century. Social and theatrical dance forms, Ethnic Dance included.

DAN 4151 19TH AND 20TH CENTURY DANCE (3)
Survey history of dance. Study of development of dance from 19th Century through 20th Century. Theatrical and other expressive forms included. Reading, lecture and visual aids.

DAN 4170 DANCE SENIOR SEMINAR (2)
PR: Senior or CC. To aid majors to understand, appraise and perfect their own art and technique through critical and aesthetic judgments of their colleagues.

DAN 4905 DIRECTED READING (2)
PR: CI and CC. Readings in topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different topics only.

DAN 4906 DIRECTED STUDY (1-5)
PR: CC. Independent studies in the various areas of Dance. Course of study and credits must be assigned prior to registration. May be repeated.

DAN 4930 SELECTED TOPICS IN DANCE (1-5)
PR: CI and CC. The content of the course will be governed by student demand and instructor interest. May be repeated for credit for different topics only.

MUSIC UNDERGRADUATE COURSES

MUC 2202 COMPOSITION (3)
PR: MUT 1113 and CI. Private instruction in original composition. Required of composition majors. May be repeated for three semesters.

MUC 2301 INTRODUCTION TO ELECTRONIC MUSIC (2)
History and repertory of electronic music; standard sound studio techniques; basic electronics as applied in electronic sound synthesis; mathematics for music, composition and electronic music.

MUC 3202 COMPOSITION (3)
PR: Necessary competency at MUC 2202 level determined by faculty jury. Private instruction in original composition. Required of composition majors. May be repeated for three semesters.

MUC 3401, 3402 ELECTRONIC MUSIC—ANALOG SYNTHESIS (3,3)
PR: MUC 2301 and CI. Composition for tape medium with analog synthesizers; use of sound recording studio; repertory or analog music synthesis; technical basis of analog systems design and construction.

MUC 3441, 3442 ELECTRONIC MUSIC—DIGITAL SYNTHESIS (3,3)
PR: MUC 2301 and CI. Computer assisted composition for conventional instruments; composition for tape medium with computer controlled analog synthesizers; direct digital synthesis; digital systems design and construction.

MUC 3601, 3602 CONTEMPORARY TECHNIQUES OF COMPOSITION (3,3)
PR: CI. Instruction in the use of major Twentieth-Century compositional techniques; tonal, unordered set, and serial composition and the use of indeterminacy in composition and performance.

MUC 4204 COMPOSITION (3)
PR: Necessary competency at MUC 3203 level determined by faculty jury. Private instruction in original composition. Required of composition majors. Must be repeated for credit for a minimum of 6 hours for majors.

MUC 4405, 4406 ELECTRONIC MUSIC—REAL-TIME PERFORMANCE (3,3)
PR: MUC 3402 and MUC 3442 or equivalent. Composition for analog and digital equipment for real-time performance applications; sound synthesis, interfacing electronics with conventional instruments, in-performance-directed composition, and design and construction of electronic composing/performing machines; use of scores, system flexibility and event-detail prediction.

MUC 4501 SEMINAR IN NEW MUSICAL SYSTEMS (2)
PR: CI. Experimental sound sources and ensemble groupings; creating of new instruments; unfamiliar sonic materials and unique social contexts for music. May be repeated for credit.

MUC 3101 BASIC CONDUCTING (2)
PR: CI. The study and practical application of basic conducting techniques. Development of skills related to the conducting of musical scores.

MUC 4301 INSTRUMENTAL CONDUCTING (2)
PR: MUC 3101 & CI. A study of those techniques of conducting unique to instrumental music ensembles: baton technique, score reading, terminology, rehearsal management.

MUIH 3016 HISTORY OF POPULAR MUSIC (2)
Popular music in the U.S. from 1820 to the present. Units on the big band era, country and western, jazz, Black music, and the rock scene beginning in 1955. May be used for University General Distribution Requirements and may be used to satisfy part of the 6 hours in-College Requirement for Fine Arts majors in Art, Dance, Theatre and as a music elective.

MUC 3211, 3212 MUSIC HISTORY (3,3)
PR: CI. Required of music majors; a survey of the historical development of musical styles and of the music representative of those styles.

MUL 2111, 2112 INTRODUCTION TO MUSIC LITERATURE (2,2)
PR: MUT 1112 or CI. A survey of representative music exemplars of the past and present with emphasis on the study of styles and form. Required for music majors.

MUL 3001 ISSUES IN MUSIC (2)
Open only to non-music majors; lectures and live performances by artist faculty of significant works from the literature for the piano; analysis and illustration in performance of the abstract and aesthetic elements in music which vitally concern the artist-performer. This course is also available on WUSF/TV Channel 16 by the O.U. Program. (S/U only).

MUL 3011, 3012 THE ENJOYMENT OF MUSIC (2,2)
Open only to non-music majors; a study in the art of music and its materials, designed to develop an understanding of basic principles of music and a technique for listening to music.

MAJOR PERFORMING ENSEMBLES (below)
PR: CI. Open to all university students with the necessary proficiency in their performing media; study and performance of music for large combinations of voices, string, woodwind, brass, or percussion instruments. May be repeated for credit.

MUN 3100 UNIVERSITY BAND (1)
MUN 3140 WIND ENSEMBLE (1)
MUN 3210 UNIVERSITY ORCHESTRA (1)
MUN 3310 UNIVERSITY SINGERS (1)
MUN 3380 UNIVERSITY-COMMUNITY CHORUS (1)
MUN 3390 JAZZ-POP CHOIR (1)
MUN 3451 PIANO ENSEMBLE (1)
MUO 3501 OPERA WORKSHOP (1)

CHAMBER MUSIC ENSEMBLES (below)
PR: CI. Open to all university students with the necessary proficiency in their performance media; study and performance of music for small combinations of voices, string, woodwind, brass, or percussion instruments, and piano; may be repeated for credit.
MUN 3340 CHAMBER SINGERS (1)
MUN 3411 STRING QUARTET (1)
MUN 3421 FLUTE CHOIR (1)
MUN 3423 CLARINET CHOIR (1)
MUN 3426 WOODWIND QUINTET (1)
MUN 3430 BRASS CHOIR (1)
MUN 3432 HORN QUARTET (1)
MUN 3436 BRASS QUINTET (1)
MUN 3440 PERCUSSION ENSEMBLE (1)
MUN 3441 MARIMBA ENSEMBLE (1)
MUN 3470 COLLEGIUM MUSICUM (1)
MUN 3490 NEW MUSIC ENSEMBLE (1)
MUN 3710 JAZZ LABORATORY BAND (1)

MUS 4900 DIRECTED READING (1-3)
PR: CI and CC. Readings in a topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration.
MUS 4905 DIRECTED STUDY (1-4)
PR: CC. Independent studies in the various areas of music; course of study and credits must be assigned prior to registration; may be repeated.

MUS 4930 SELECTED TOPICS IN MUSIC (1-4)
PR: CI and CC. The content of the course will be governed by student demand and instructor interest. May be repeated for credit for different topics only.
MUS 4931 SELECTED STUDIO TOPICS IN MUSIC (1-4)
PR: CI. The content of the study will be governed by individual student demand and instructor interest with an emphasis on individual instruction.
MUS 4935 MUSIC SENIOR SEMINAR (2)
PR: CI. To aid majors to understand, appraise and perfect their own art through critical and aesthetic judgments of their colleagues. (S/U only.)

MUT 1001 RUDIMENTS OF MUSIC (2)
Open to non-music majors; development of skills in hearing and performing music and in basic notation. Will not count as degree credit for music majors.

MUT 1111, 1112 MUSIC THEORY (3,3)
PR: CI. Required of music majors; development of skills in perceiving and writing music through the use of aural and visual analysis of examples from all historical periods of music literature.

MUT 1241, 1242 AURAL THEORY (1,1)
PR: CI. Course designed to begin training in aural recognition and vocalization of materials used in music composition. Includes rhythmic, melodic and harmonic dictation, and sight singing. To be taken concurrently with MUT 1111, 1112.

MUT 2116, 2117 MUSIC THEORY (3,3)
PR: MUT 112. Required of music majors; continuation of MUT 1111 and 1112.

MUT 2246, 2247 ADVANCED AURAL THEORY (1,1)
PR: MUT 1243. Course designed to continue training in aural recognition and vocal recognition of materials used in music composition. Includes rhythmic, melodic and harmonic dictation, and sight singing. To be taken concurrently with MUT 2116, 2117.

IMPROVISATION COURSES (below)
PR: MUT 1112 and CI. A studio course of study designed to acquaint the student with basic improvisational techniques; emphasis on individual performance. May be repeated for credit.
MUT 3631 IMPROVISATION: FUNDAMENTAL TECHNIQUES (1)
MUT 3642 IMPROVISATION: JAZZ TECHNIQUES (1)

MUT 4311, 4312 ORCHESTRATION (2,2)
PR: CI. Intensive study and practice in scoring music for various combinations of instruments, including symphony orchestra, band, and smaller ensembles of string, woodwind, brass, and percussion instruments.

MUT 4411 SIXTEENTH CENTURY PRACTICE (2)
PR: MUT 2117. A study of the music of the 16th century from a theoretical standpoint; development of skills in perceiving and writing music in the style of the period through the use of aural and visual analysis.

MUT 4421 EIGHTEENTH CENTURY PRACTICE (2)
PR: MUT 2117. An intensive study of the contrapuntal practice of the 18th century; development of skills in perceiving and writing music in the style of the period through the use of aural and visual analysis.

MUT 4431 TWENTIETH CENTURY PRACTICE (2)
PR: MUT 2117. A study of 20th century theoretical concepts; development of skills in perceiving and writing music in contemporary styles through the use of aural and visual analysis.

SECONDARY APPLIED MUSIC COURSES (below)
PR: CI. One-half-hour private lesson or one hour class per week for music students wishing to gain proficiency in an area other than their applied performance major and for a limited number of non-music majors who have had prior musical training. Course is open by audition only.
MV 1121 APPLIED TRUMPET (1)
MV 1122 APPLIED FRENCH HORN (1)
MV 1123 APPLIED TROMBONE (1)
MV 1214 APPLIED BARITONE (1)
MV 1215 APPLIED TUBA (1)
MV 1211 APPLIED PIANO (1)
MV 1211 APPLIED PERCUSSION (1)
MV 1211 APPLIED VIOLIN (1)
MV 1212 APPLIED VIOLA (1)
MV 1213 APPLIED VIOLONCELLO (1)
MV 1214 APPLIED DOUBLE BASS (1)
MV 1215 APPLIED HARP (1)
MV 1211 APPLIED VOICE (1)
MV 1211 APPLIED FLUTE (1)
MV 1212 APPLIED OBOE (1)
MV 1213 APPLIED CLARINET (1)
MV 1215 APPLIED SAXOPHONE (1)

CLASS PIANO COURSES (below)
PR: CI. Class is elementary piano and music fundamentals designed for students with limited keyboard experience. Primary emphasis is placed on sight-reading, accompanying, transposition, harmonization, basic technique, and appropriate literature.
MVK 1111 MUSIC MAJORS, LEVEL I (2)
MVK 1121 MUSIC MAJORS, LEVEL II (1)
MVK 1111 MUSIC MAJORS, LEVEL III (2)
MVK 2121 MUSIC MAJORS, LEVEL IV (2)
MVK 3111 MUSIC MAJORS, LEVEL V (2)
MVK 1811 NON-MUSIC MAJORS, LEVEL I (2)
MVK 1821 NON-MUSIC MAJORS, LEVEL II (2)
MVK 2811 NON-MUSIC MAJORS, LEVEL III (2)
MVK 2821 NON-MUSIC MAJORS, LEVEL IV (2)

APPLIED MUSIC COURSES (below)
PR: CI. Required of all applied music majors; open to a limited number of non-music majors by audition only. Private and class instruction in string, woodwind, brass and percussion instruments, voice and piano. May be repeated for credit.
MV 1411 APPLIED TRUMPET (3)
MV 1412 APPLIED FRENCH HORN (3)
MV 1413 APPLIED TROMBONE (3)
MV 1414 APPLIED BARITONE (3)
MV 1415 APPLIED TUBA (3)
MV 1411 APPLIED PIANO (3)
MV 1411 APPLIED PERCUSSION (3)
MV 1411 APPLIED VIOLIN (3)
MV 1412 APPLIED VIOLA (3)
MV 1413 APPLIED VIOLONCELLO (3)
MV 1414 APPLIED DOUBLE BASS (3)
MV 1415 APPLIED HARP (3)
MV 1411 APPLIED VOICE (3)
APPLIED MUSIC COURSES (below)
PR: Necessary competency at freshman level determined by faculty jury examination. Required of all applied music majors. Private and class instruction in string, woodwind, brass, and percussion instruments, voice and piano. May be repeated for credit three semesters only.

MVW 1411 APPLIED FLUTE (3)
MVW 1412 APPLIED OBOE (3)
MVW 1413 APPLIED CLARINET (3)
MVW 1414 APPLIED BASSOON (3)
MVW 1415 APPLIED SAXOPHONE (3)

MVW 1413 APPLIED MUSIC COURSES
MVW 1414 APPLIED MUSIC COURSES
MVW 1415 APPLIED MUSIC COURSES

MUSIC STUDENT PEDAGOGY COURSES (below)
PR: CI. May be elected by undergraduate music majors; emphasis on the business management of the music studio, the musical responsibilities of the studio teacher, the techniques of private instruction. May be repeated for credit for a maximum of 4 hours for the same section.

MVW 4443 APPLIED FLUTE (3)
MVW 4444 APPLIED BASSOON (3)
MVW 4445 APPLIED SAXOPHONE (3)

GRADUATE COURSES
MUC 6251 COMPOSITION (4)
PR: CI. Private instruction in original composition. Required of composition majors. May be repeated for three semesters.

MUC 6444, 6445 ELECTRONIC MUSIC/ANALOG/DIGITAL SYSTEMS RESEARCH (3,3)
PR: CI. State-of-the-art compositional and performance applications; new concepts of electronic music synthesis; documentation and critical analysis of new repertory.

MUG 6256, 6256, 6258 CHORAL LITERATURE AND CONDUCTING (4,4,4)
PR: CI. Combination of seminar, classroom and laboratory types of experience designed to provide depth in stylistic study of choral music literature and performance.

MUL 6375 TWENTIETH CENTURY MUSIC LITERATURE (2)
PR: CI. A study of the literature, compositional techniques and music philosophies of the major 20th century composers from Debussy to the present.

MUL 6410, 6411 KEYBOARD REPERTORY (2,2)
PR: CI. A study of style, history and performance practice in keyboard repertory including masterworks of all periods.

MUL 6505 SYMPHONIC LITERATURE (2)
PR: CI. A chronological study of the development of orchestral music; analysis and study of major works from a stylistic and biographical perspective.

MUL 6565 CHAMBER MUSIC LITERATURE (2)
PR: CI. A survey and stylistic analysis of chamber music repertory 1750 through the present day; emphasis on aural recognition of representative works.

MUL 6624, 6625 SONG LITERATURE (2,2)
PR: CI. Solo song literature from the 17th century through the contemporary with emphasis on German lieder, French songs and contemporary English and American songs special emphasis on performance.

MUL 6663 OPERA LITERATURE (2)
PR: CI. A chronological study of the development of opera from 1600 to the present; emphasis on the technical, stylistic, and performance aspects of opera.

MUL 6687 SOLO VOCAL LITERATURE IN ORATORIO (2)
PR: CI. A survey of literature for the solo voice in cantatas and oratorio music.

MAJOR ENSEMBLE PERFORMANCE COURSES (below)
PR: CI. Open to all university students with the necessary proficiency in their performing media; study and performance of music for large combinations of voices, string, woodwind, brass or percussion instruments; may be repeated for credit.

MUN 6100 UNIVERSITY BAND (1)
MUN 6140 WIND ENSEMBLE (1)
MUN 6210 UNIVERSITY ORCHESTRA (1)
MUN 6310 UNIVERSITY SINGERS (1)
MUN 6380 UNIVERSITY-COMMUNITY CHORUS (1)
MUN 6390 JAZZ-POP-CHOIR (1)
MUN 6451 PIANO ENSEMBLE (1)
MUN 6501 OPERA WORKSHOP (1)
CHAMBER MUSIC ENSEMBLES COURSES (below)
PR: Cl. Open to all university graduate students with the necessary proficiency in their performance media; study and performance of music for small combinations of voices, string, woodwind, brass or percussion instruments, and piano; may be repeated for credit.
MUN 6340 CHAMBER SINGERS (1)
MUN 6411 STRING QUARTET (1)
MUN 6421 FLUTE CHOIR (1)
MUN 6423 CLARINET CHOIR (1)
MUN 6426 WOODWIND QUINTET (1)
MUN 6430 BRASS CHOIR (1)
MUN 6432 HORN QUARTET (1)
MUN 6436 BRASS QUINTET (1)
MUN 6440 PERCUSSION ENSEMBLE (1)
MUN 6441 MARIMBA ENSEMBLE (1)
MUN 6470 COLLEGIUM MUSICUM (1)
MUN 6490 NEW MUSIC ENSEMBLE (1)
MUN 6710 JAZZ LABORATORY BAND (1)

MUS 5905 DIRECTED STUDY (1-4)
PR: CC. Independent studies in the various areas of music; course of study and credits must be assigned prior to registration; may be repeated.

MUSIC WORKSHOP COURSES (below)
PR: Cl. Intensive study in the specialized areas indicated below; open to teachers, University students, and secondary students; credit available to qualified students.
MUS 5924 BAND WORKSHOP (1-2)
MUS 5925 CHAMBER MUSIC WORKSHOP (1-2)
MUS 5926 CHORUS WORKSHOP (1-2)
MUS 5927 ORCHESTRA WORKSHOP (1-2)
MUS 5928 PIANO WORKSHOP (1-2)
MUS 5929 STRING WORKSHOP (1-2)

MUS 6793 TECHNIQUES OF RESEARCH IN MUSIC (2)
PR: CC. A study of the methods of research and professional bibliography and with an individual, formal project as a terminal requirement.
MUS 6906 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

MUS 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)
MUS 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)
MUS 6976 GRADUATE RECITAL (2)
PR: CC.

MUS 6994 GRADUATE INSTRUCTION METHODS (1-4)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credits per student. (S/U only.)

MUS 6995 GRADUATE RESEARCH METHODS (1-4)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credits per student. (S/U only.)

MUS 6996 GRADUATE RESEARCH METHODS (1-4)
A graduate level review of basic theoretical concepts with emphasis on the common practice period. The course serves to satisfy deficiencies in music theory and as such does not count toward the degree.

MUT 6535, 6547 CRITICAL ANALYSIS OF MUSIC REPORATORY (2, 2)
PR: Cl. Required of music theory majors; study of the development of musical styles in western civilization from Antiquity to the present, includes analysis and performance of representative works.

MUT 6751, 6752 TEACHING OF MUSIC THEORY (2, 2)
PR: Cl. Comparative study of teaching techniques, procedures, and materials used in teaching the individual student in performance.

APPLIED MUSIC COURSES (below)
PR: Necessary competency determined by faculty jury audition. Required of all applied music majors. Private and class instruction.
MVB 6251 APPLIED TRUMPET, SECONDARY (2)
present. Normally ten plays will be read. Required of all theatre majors. Open to non-majors.

THE 3925 PERFORMANCE (1)
The rehearsal, construction, production of major theatrical works. Concurrent registration in this course is expected of all students who are enrolled in courses carrying an ACPI (Advanced Course Production Involvement). Assignments are made contractually at the time of registration. Open to non-majors on a credit or non-credit basis. May be repeated.

THE 4180 THEATRE ORIGINS (4)
PR: Completion of first three years as a theatre major and one from the following: THE 4320, THE 4330, THE 4370, THE 4401, THE 4442, THE 4480, or CI. An analysis of the development of theatre out of myth, ritual, and liturgy. Emphasis will be placed on what subsequent attempts to understand the resulting phenomena can teach us about the nature of our art. Required of all theatre majors.

THE 4264 CLOTHING THROUGH THE AGES (2)
PR: Completion of the four required 2000 level theatre courses. A survey of clothing and dress from Ancient Egypt to the 20th Century with an emphasis on cultural and social influences. (A requirement in the tech-design track/costume.) Open to upper level non-majors with CI.

THE 4266 ARCHITECTURE AND DECOR (2)
PR: Completion of the four required 2000 level theatre courses. The survey of architectural and decorative motifs and decor and their stylistic concepts. (A requirement in the tech-design track/scenic.) Open to upper level non-majors with CI.

THE 4320 THE THEATRE OF MYTH AND RITUAL/ NORTHERN EUROPEAN (950-1600) AND ORIENTAL (400-1200) (3)
PR: THE 3110. An investigation into the interrelationship of myth, ritual, and theatre event. Enables the student to analyze these scripts in light of their present productivity and past cultural energy. Open to non-majors with CI.

THE 4330 SHAKESPEARE FOR THE THEATRE (3)
PR: THE 3110. Study of several of Shakespeare's plays from the histrionic point of view. "No sort of study of a (Shakespeare) play can better the preparation of its performance if this is rightly done." - Harley Granville-Baker. Open to non-majors with CI.

THE 4370 THE 19TH CENTURY THEATRE REVOLUTION (3)
PR: THE 3110. Survey of materials in the Continental, English, and American Stage dating from 1870. Deals with the extraordinary playwrights and new theatre movements. Open to non-majors with CI.

THE 4401 O'NEILL AND AFTER (3)
PR: THE 3110. Survey of materials in the American Theatre from the writings of Eugene O'Neill to the present. Open to non-majors with CI.

THE 4442 THE COMEDY OF THE CLASSIC AND NEO-CLASSIC STAGE (3)
PR: THE 3110. A course in the function of the script for the active theatre artist, treating materials from the Ancient Greeks through the Restoration and the theatre of Moliere, giving some attention to later reflections. Open to non-majors with CI.

THE 4480 DRAMA-SPECIAL TOPICS (3)
PR: THE 3110. A course in the function of the script for the active theatre artist treating materials of a particular playwright or grouping of playwrights. Repeatable with consent of advisor and change in topic. Open to non-majors with CI.

THE 4562 SENIOR COLLOQUIUM IN THEATRICAL CREATIVITY (3)
PR: THE 4180. A colloquium in the nature of the synthesized theatre object. Required of all theatre majors. Open to senior non-majors with CI.

THE 4900 DIRECTED READING (1-4)
PR: CI and CC. Readings in a topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different topics only.

THE 4905 DIRECTED STUDIES (1-4)
PR: CC. Independent studies in the various areas of Theatre.

Course of study and credits must be assigned prior to registration.

THE 4927 ADVANCED PERFORMANCE (1)
PR: THE 3925 or CI. The study, rehearsal and performance of major theatrical works. Admission by audition. May be repeated. Additional credit may be earned with THE 4905 or THE 5909.

THE 4930 SELECTED TOPICS IN THEATRE (1-8)
PR: CI. The content of the course will be governed by student demand and instructor interest. May be lecture or class discussion or studio format. May be repeated for credit for different topics only.

TPA 2200 BASIC THEATRE CRAFTS I (2)
The scenic materials and skills basic to theatrical production. An introductory course with lab. Required of all theatre majors. Open to non-majors.

TPA 2223 BASIC THEATRE CRAFTS II (2)
The fundamental materials and skills used in lighting and costuming stage productions. An introductory course with lab. Required of all theatre majors. Open to non-majors.

TPA 2250 WORKSHOP IN STAGE MAKEUP (1)
Beginning theory and practice in make-up for the stage. Theatre majors given preference. A studio course.

TPA 2400 THE ART OF MANAGING THE ARTS (2)
An overview of the administrative role required in the arts - examining all media in their historic and topical references. The course will survey the areas of administrative, production and stage management. Open to non-majors.

TPA 3086 MEANS OF VISUAL EXPRESSION (3)
PR: Completion of the four required 2000 level courses. The study of presentation techniques for visual design and technology as applied to the development of visual dynamics. Required of all theatre majors. Open to non-majors with TPA 2200 and CI.

TPA 3221 LIGHT, COLOR, TEXTURE (2)
PR: TPA 2200, TPA 2223. The principles of color theory and composting as pertains to lighting design. The study of visual perception and presentation including classical and contemporaneous concepts. Laboratory experiments in usage of light to create space utilizing shadow, texture (source and surface), and blending. A requirement in the tech-design track/ lighting.

TPA 3601 STAGE MANAGEMENT (2)
PR: TPA 2200, TPA 2223. A practical course in the working organizational function of the stage manager in theatre, dance, opera, and other live performance situations.

TPA 3810 INTRODUCTION TO PUPPETRY (3)
PR: Completion of the four required 2000 level courses. Principles and methods of puppetry with a historical survey of major forms and practical problems with laboratory production. Open to non-majors with CI.

TPA 3840 PUPPETRY PERFORMANCE AND PRODUCTION (4)
PR: TPA 3810. The creation, building, rehearsal, and performance of plays for puppet theatre. May be repeated one time for additional elective credit, with CI, to a total of 8 hours. Open to non-majors with CI.

TPA 4012 PROJECT DESIGN: HONORS (3)
PR: One of TPA 4021, TPA 4045, TPA 4061. A workshop for students in scenery, lighting, and costume design admitted only by recommendation of instructor and review of portfolio. Consideration will be given to the requirements in integrating the design for setting, costumes, and lights; under special circumstances may be credit for actualized production design.

TPA 4020 LIGHT DESIGN I (3)
PR: TPA 3221, TPA 4285. The aesthetic and practical application of the elements of design in lighting for theatre presentation. A requirement in the tech-design track/ lighting.

TPA 4021 LIGHT DESIGN II (3)
PR: TPA 4020. The aesthetic and practical application of the elements of design in lighting for theatre presentation. A requirement in the tech-design track/ lighting.

TPA 4040 COSTUME DESIGN I (3)
PR: TPA 4230, THE 4264. The aesthetic and practical application of the elements of design in costume for theatre presentation. A requirement in the tech-design track/ costume.
TPA 4045 COSTUME DESIGN II (3)
PR: TPA 4040. The aesthetic and practical application of the elements of design in costume for theatre presentation. A requirement in the tech-design track/costume.

TPA 4060 SCENE DESIGN I (3)

TPA 4061 SCENE DESIGN II (3)

TPA 4073L GRAPHICS FOR THEATRE DESIGNERS (3)
PR: Completion of the four required 2000 level theatre courses. A course in rendering the inanimate form, and in drawing the human form and fabrics. A requirement in the tech-design track.

TPA 4081 SCENE PAINTING (2)
PR: THE 4266, TPA 4052. A practical course in the painting of stage scenery — media and application.

TPA 4211 STAGECRAFT (3)
PR: THE 4266, TPA 4052. A practical course in drafting for the stage and scene construction and application. A requirement in the tech-design track/scenic.

TPA 4230 COSTUME CONSTRUCTION (3)
PR: THE 4264, TPA 4052. A practical course in the drafting of workable patterns for costuming the actor. Materials, skills, and techniques for construction of costumes and costume accessories for stage will be treated. Included topics are millinery, footwear, jewelry, masks, armor, corsetry; both period and modern. A requirement in the tech-design track/costume.

TPA 4240 STAGE PROPERTIES: TECHNIQUES AND MATERIALS STUDIO (2)
PR: TPA 4052 and either THE 4264 or THE 4266. Demonstration and experience with comparatively newer materials used in construction of stage properties. Modeling of prototypes and basic casting techniques. Organization of shop.

TPA 4281 PRACTICUM IN TECHNICAL SUPERVISION (2)
PR: One of TPA 4211, TPA 4230, or TPA 4285. A study of the technical operation and organization for the theatre technologist in costume or in scenery-lighting. Advanced problems in technology and organization.

TPA 4285 AUDIO-VISUAL APPLICATIONS FOR THE STAGE (3)
PR: TPA 3221, TPA 4052. A study of basic electrical and electronic systems of sound and light control. Optical principles of projection and light transmission will be included to establish skills in the use of projected scenery. Analysis of amplification and recording techniques and technology, and the study of acoustical characteristics will prepare the student for a design of production sound systems. A requirement in the tech-design track/lighting.

TPA 4402 THEATRE MANAGEMENT WORKSHOP (2)
PR: Completion of the first two years of the theatre program. The study of management relations for the theatre, including all fields of management from box office to publicity.

TPP 2110 VOICE-BODY-IMPROVISATION (2)
Exploring the elements basic to acting skills — a participation course. Required of all theatre majors. Open to non-majors.

TPP 3111 WORKSHOP FOR TEXT ANALYSIS (3)
PR: Completion of the four required 2000 level theatre courses. The techniques of textual and script analysis related to the composition of performance. Required of all theatre majors. May be taken by non-majors with TPP 2110 and CI.

TPP 3121 IMPROVISATION I (3)
PR: Completion of the four required 2000 level courses. An intensive study in Improvisation as an enhancement of the actor’s skills. Exercises and theatre games as flexible forms which accommodate improvisation and physical invention are examined and used to develop group creativity. Open to non-majors with CI.

TPP 3122 IMPROVISATION II (3)
PR: TPP 3121; audition. A concentrated study of advanced techniques in improvisational skills as applied to the use of scenario. Depending on ensemble capabilities, the course will culminate in a classroom improvisational presentation. Open to non-majors with PR.

TPP 3235 THEATRE FOR SPECIAL AUDIENCES (3)
PR: Completion of the four required 2000 level courses and/or CI. The presentation of a production for a special audience (ethnic, children, aged, institutionalized, etc.) Those enrolled would be expected to continue with TPP 3236. With CI, may be repeated one time as additional elective credit (total of 6 hours). Open to non-majors with CI.

TPP 3236 PERFORMING THEATRE FOR SPECIAL AUDIENCES (3)
PR: TPP 3235 (preceding semester) and/or CI. The presentation of production for a special audience (ethnic, children, aged, institutionalized, etc.). Follows directly from TPP 3235 and must be taken in the semester immediately following that course. With CI, may be repeated one time as elective credit (total of 6 hours). Open to non-majors with CI.

TPP 3500 BODY DISCIPLINES (2)
PR: Completion of the four required 2000 level theatre courses. A laboratory course in various disciplines or systems in controlling and understanding the body’s motive powers, with focus on their use for the stage performer. Repeatable for credit. Required of all theatre majors with a performance concentration. Open to upper-level non-majors with CI.

TPP 3790L VOICE PREPARATION FOR THE ACTOR (2)
PR: Completion of the four required 2000 level theatre courses. A laboratory in voice production and corrective speech for the actor. Repeatable for credit. Required of all theatre majors with a performance concentration. Open to upper-level non-majors with CI.

TPP 4140 SCENE STUDY II (3)
PR: TPP 4150 and audition. Methodology and styles. Examination of the actor’s craft and skills needed to fulfill the demands of various theatre forms. Special attention will be paid to the history of acting styles. Required of all theatre majors with a performance concentration.

TPP 4150 SCENE STUDY I (3)
PR: TPP 3111 and audition. Basic scene study. Special problems in movement and speech to be integrated with character development, rehearsal techniques, and performance composition. Required of all theatre majors with a performance concentration.

TPP 4152 SCENE STUDY III (3)
PR: TPP 4140 and audition. Advanced scene study. Required of all theatre majors with a performance concentration.

TPP 4180 SCENE STUDY HONORS (3)
PR: TPP 4140; admittance by competitive audition. The aesthetics of acting. The various theories of the art. A studio course.

TPP 4220 AUDITION WORKSHOP FOR THE ACTOR (2)
PR: TPP 4150 and TPP 4140. Preparation for professional audition; discussion of professional objectives.

TPP 4230L LABORATORY WORKSHOP IN PERFORMANCE (3)
PR: TPP 3111 and/or CI. Special workshop in advanced techniques based upon individual problems and needs. May be repeated twice (to a total of 9 hours credit).

TPP 4250 MUSIC THEATRE WORKSHOP (3)
PR: TPP 3111. Special problems in acting as applied to the musical theatre.

TPP 4310, 4311 DIRECTING I, II (3)
PR: TPP 4150. An elective sequence in directing. A workshop course in which the student first encounters the basic tasks of the director by preparing and directing one or two scenes and then progresses to more complex scene work in a variety of styles and finally proceeds to the short play or theatre pieces.

TPP 4610 WRITING FOR THE THEATRE (3)
PR: Completion of the first two years as a theatre major and CI.
An elective in writing for the theatre, starting with explorations of theatre as a medium, exercises in theatre form and techniques and progressing to an advanced workshop in plays and other styles of theatre pieces. May be repeated for credit. Open to non-majors with CI.

TPP 4920 SENIOR WORKSHOP FOR ACTORS (3)
PR: TPP 4152, TPP 3500, TPP 3790L. A workshop in advanced vocal and movement techniques. Required for all theatre majors with a performance concentration.

GRADUATE COURSES

THE 5902 DIRECTED READING (1-4)
PR: CI and CC. Readings in topics of special interest to the student. Contract defining scope of project, materials used, expected results and credit hours assigned must be completed prior to registration. May be repeated for different topics.

THE 5909 DIRECTED STUDIES (1-6)
PR: CC. Independent studies in the various areas of Theatre. Course of study and credits must be assigned prior to registration.

THE 5931 SELECTED TOPICS IN THEATRE (1-8)
PR: CI. The content of the course will be governed by student demand and instructor interest. May be lecture or class discussion or studio format. May be repeated for credit for different topics only.

COLLEGE OF MEDICINE

ANATOMY

BMS 6100 GROSS ANATOMY (var.)
PR: Admission to College of Medicine.

BMS 6110 MICROSCOPIC ANATOMY (var.)
PR: Admission to College of Medicine.

BMS 6150 NEUROANATOMY (var.)
PR: Admission to College of Medicine.

BMS 6160 ANATOMY SEMINAR (0)
PR: Consent of Chairman, Department of Anatomy.

BMS 7170 REGIONAL ANATOMY I—Head and Neck (var.)
PR: Enrolled in College of Medicine.

BMS 7171 REGIONAL ANATOMY II—Thorax (var.)
Abdomen, Pelvis and Perineum
PR: Enrolled in College of Medicine.

BMS 7172 REGIONAL ANATOMY III—Extremities (var.)
PR: Enrolled College of Medicine.

BMS 7175 ADVANCED NEUROANATOMY (var.)
PR: Enrolled in College of Medicine.

BMS 7176 ADVANCED MICROSCOPIC ANATOMY (var.)
PR: Enrolled in College of Medicine.

BMS 7177 APPLIED NEUROANATOMY (var.)
PR: Enrolled in College of Medicine.

GMS 6600C CORE COURSE IN HUMAN ANATOMY (5)
PR: Admission to Ph.D. Program in Medical Sciences.

GMS 6601 METHODS OF ELECTRON MICROSCOPY IN MEDICAL RESEARCH (3)
PR: GMS 6600-GMS 6300 or CC.

GMS 6603 COMPARATIVE NEUROANATOMY (2)
PR: GMS 6100-GMS 6300 or CC.

GMS 6604 GMS 6604 HUMAN EMBRYOLOGY (3)
PR: GMS 6600-GMS 6300 or CC.

GMS 6605 COMPARATIVE HEMATOLOGY (2)
PR: GMS 1600-GMS 6109, 6608 or CC.

GMS 6606 ANATOMICAL ILLUSTRATIONS AND METHODS (2)
PR: GMS 6600-GMS 6300, GMS 6609, 6102 or CC.

GMS 6607 HISTORY OF ANATOMY (2)
PR: GMS 6600-GMS 6300 or CC.

GMS 6608 ADVANCED MICROSCOPIC ANATOMY (3-6)
PR: GMS 6600-GMS 6300 or CC.

GMS 6609 ADVANCED HUMAN GROSS ANATOMY (6-12)
PR: GMS 1600-GMS 6300 or CC.

GMS 6610 ADVANCED NEUROANATOMY (3-6)
PR: Admission to GMS program and acceptance into the Anatomy department. This course is concerned with the organization of the human nervous system at the gross, microscopic and ultra-structural levels. May be repeated up to 8 credit hours.

GMS 6611 INTRODUCTION TO ANATOMICAL RESEARCH (2)
PR: Admission to GMS program and acceptance into the Anatomy department. This course is designed to introduce the student to research work ongoing in the department of Anatomy. May be repeated up to 9 credit hours.

GMS 6612 SUPERVISED TEACHING IN HUMAN ANATOMY (3)
PR: GMS 1108, 6609, or 6610 and acceptance into the Anatomy department. This course is designed to prepare the student to assume teaching responsibilities associated with a faculty position in a medical school anatomy department. May be repeated up to 12 credit hours (one time only in each of the anatomical disciplines).

BIOCHEMISTRY

BMS 6200 BIOCHEMISTRY (var.)
PR: Admission to College of Medicine.

BMS 6230 BIOCHEMISTRY SEMINAR (0)
PR: CI.

BMS 7206 RESEARCH IN BIOCHEMISTRY (var.)
PR: Enrolled in College of Medicine.

BMS 7262 MOLECULAR BASIS OF METABOLIC REGULATION (var.)
PR: Admitted to College of Medicine.

GMS 6103 METABOLIC BASIS OF DISEASE (2)
PR: GMS 6600-GMS 6300 or CC.

GMS 6200C CORE COURSE IN MEDICAL BIOCHEMISTRY (5)
PR: Admission to Ph.D. Program in Medical Sciences.

GMS 6414 BIOLOGICAL MEMBRANES-STRUCTURE AND FUNCTION (3)
PR: GMS 6600-GMS 6300 or CC.

GMS 6415 LIPID METABOLISM AND REGULATION (3)
PR: GMS 6600-GMS 6300 or CC.

GMS 6416 MACROMOLECULAR METABOLISM (3)
PR: GMS 6600-GMS 6300 or CC.

COMPREHENSIVE MEDICINE

MEL 8206 COMMUNITY PUBLIC HEALTH AND PREVENTIVE MEDICINE (var.)
PR: Admission to the College of Medicine.

MEL 8207 LABORATORY RESEARCH IN TROPICAL MEDICINE (var.)
PR: Admission to the College of Medicine.

FAMILY MEDICINE

MEL 7255 OUT-PATIENT FAMILY MEDICINE (var.)
PR: Enrolled in College of Medicine.

MEL 7256 IN-PATIENT FAMILY MEDICINE (var.)
PR: Enrolled in College of Medicine.

MEL 7257 GERIATRIC MEDICINE (var.)
PR: Enrolled in College of Medicine.

BCC 8171 FAMILY PRACTICE PRECEPTORSHIP (var.)
PR: Enrolled in College of Medicine.
### INTERDISCIPLINARY

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<td>MEL 7102</td>
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<td>MEL 7103</td>
<td>PEDIATRIC CARDIOLOGY AND PHYSIOLOGY</td>
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<td>DEPARTMENTAL OVERVIEWS</td>
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<td>MEL 7107</td>
<td>IMMUNOLOGY OF PARASITIC INFECTIONS</td>
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### INTERNAL MEDICINE

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### MEDICINE MICROBIOLOGY AND IMMUNOLOGY

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<td>IMMUNOCHEMISTRY</td>
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<td>GMS 6417</td>
<td>ANIMAL RESEARCH METHODS</td>
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### OBSTETRICS/GYNECOLOGY

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<td>MEL 7411</td>
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<td>MEL 7410</td>
<td>THE INFERTILE COUPLE</td>
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MEL 7412 INFECTIOUS DISEASE IN OBSTETRICS AND GYNECOLOGY
PR: Admission to College of Medicine.

**OPHTHALMOLOGY**

MEL 7501 MEDICAL OPHTHALMOLOGY
PR: Admission to College of Medicine.
MEL 7503 TUTORIAL COURSE OF ADVANCED OPHTHALMOLOGY
PR: Admission to College of Medicine.
MEL 7506 OCULAR INFLAMMATION
PR: Admission to College of Medicine.
MEL 7507 RETINAL ELECTIVE
PR: Admission to College of Medicine.
MEL 7508 NEUROOPHTHALMOLOGY
PR: Admission to College of Medicine and MEL 7501 or MEL 5703.
MEL 8520 OPHTHALMIC PATHOLOGY
PR: Admission to College of Medicine and MEL 7501 or MEL 5703.

**PATHOLOGY**

BMS 6600 PATHOLOGY
PR: Admission to the College of Medicine.
BMS 6610 LABORATORY MEDICINE
PR: Admission to College of Medicine.
BMS 7611C ELECTIVE IN LABORATORY MEDICINE
PR: Enrolled in College of Medicine.
BMS 7662C SURGICAL PATHOLOGY
PR: Enrolled in College of Medicine.
BMS 7663C THAULOLOGIC ANATOMY
PR: Enrolled in College of Medicine.
GMS 6111 HUMAN SYSTEMIC PATHOLOGY
GMS 6112 BIOCHEMICAL PATHOLOGY
GMS 6113 IMMUNOPATHOLOGY
GMS 6300C CORE COURSE IN PATHOLOGY
PR: Admission to the Ph.D. Program in Medical Sciences.
BMS 6301 ADVANCED GROSS PATHOLOGY
PR: GMS 6600-GMS 6300 or CC.
GMS 6302 ADVANCED MICROSCOPIC PATHOLOGY
PR: GMS 6600-GMS 6300 or CC.
GMS 6303 ELECTRON MICROSCOPY OF DISEASE STATES
PR: GMS 6600-GMS 6300 or CC.

**PEdiATRICS**

BCC 6142 PEDIATRICS CLERKSHIP
PR: Admission to College of Medicine.
MEL 7551 INPATIENT PEDIATRICS, TAMPA GENERAL HOSPITAL
PR: Enrolled in College of Medicine.
MEL 7560 PEDIATRIC CLINICAL CARDIOLOGY
PR: Enrolled in College of Medicine.
MEL 7563 PEDIATRIC NEPHROLOGY
PR: Enrolled in College of Medicine.
MEL 7565 NEONATOLOGY
PR: Enrolled in College of Medicine.
MEL 8591C RESEARCH IN PEDIATRIC MEDICINE AND GENETICS
PR: Enrolled in College of Medicine.
MEL 7596C DIABETES & METABOLIC DISEASE RESEARCH
PR: Enrolled in College of Medicine.

**PHARMACOLOGY**

BMS 6400 PHARMACOLOGY
PR: Enrolled in College of Medicine.
BMS 6420 PHARMACOLOGY SEMINAR
PR: CC.
BMS 7371 CLINICAL PHARMACOLOGY
PR: Enrolled in College of Medicine.
BMS 7462 PULMONARY PHARMACOLOGY
PR: Enrolled in College of Medicine.
BMS 7463 DRUG METABOLISM AND PHARMACOKINETICS
PR: Enrolled in College of Medicine.
BMS 7464C RESEARCH IN PHARMACOLOGY
PR: Enrolled in College of Medicine.
BMS 7469 PSYCHOPHARMACOLOGY
PR: Enrolled in College of Medicine.
BMS 7470 CLINICAL PHARMACOLOGY OF CARDIOVASCULAR AGENTS
PR: Enrolled in College of Medicine.
BMS 7472 CLINICAL PHARMACOLOGY OF ANTIBIOTICS
PR: Enrolled in College of Medicine.
GMS 6469 AUTONOMIC PHARMACOLOGY
GMS 6500C CORE COURSE IN PHARMACOLOGY
PR: Admission to Ph.D. program in Medical Sciences.
GMS 6501 THEORETICAL PHARMACOLOGY
GMS 6502 CLINICAL PHARMACOLOGY
GMS 6503 PHARMACOLOGY LABORATORY
PR: GMS 6600-GMS 6300 or CC.
GMS 6504 IMMUNOPHARMACOLOGY
PR: GMS 6600-GMS 6300 or CC.
GMS 6505 PHARMACOLOGY OF BACTERIAL PRODUCTS
PR: GMS 6600-GMS 6300 or CC.
GMS 6506 THE PHARMACOLOGY OF BIOLOGICAL MEMBRANES
GMS 6507 DRUG METABOLISM
PR: GMS 6600-GMS 6300 or CC.
GMS 6508 DRUG ADDICTION, TOLERANCE AND PHYSICAL DEPENDENCE
PR: GMS 6600-GMS 6300 or CC.
GMS 6509 HISTORY OF PHARMACOLOGICAL INVESTIGATION
PR: GMS 6600-GMS 6300 or CC.
PHYSIOLOGY

BMS 6500 MEDICAL PHYSIOLOGY (var.)
PR: Admission to College of Medicine.

BMS 6530 PHYSIOLOGY SEMINAR (0)
PR: Consent of Chairman, Department of Physiology.

BMS 7560 RESEARCH IN PHYSIOLOGY (var.)
PR: Enrolled in College of Medicine.

BMS 7561 CARDIO-PULMONARY-RENAL PHYSIOLOGY (var.)
PR: Enrolled in College of Medicine.

BMS 756C CONTROL OF PHYSIOLOGICAL SYSTEMS (var.)
PR: Enrolled in College of Medicine.

GMS 6400C CORE COURSE IN PHYSIOLOGY (5)
PR: Admission to Ph.D. Program in Medical Sciences.

GMS 6401 KIDNEY, FLUIDS, AND ELECTROLYTES (4)
PR: GMS 6400. Consent of Chairman of Department of Physiology.

GMS 6402 RESPIRATION (4)
PR: GMS 6400. Consent of Chairman of Department of Physiology.

GMS 6403 ENDOCRINE MECHANISMS (4)
PR: GMS 6400. Consent of Chairman of Physiology.

GMS 6404 SYSTEMS NEUROPHYSIOLOGY (4)
PR: GMS 6600-GMS 6300 or CC.

GMS 6407 SMOOTH AND SKELETAL MUSCLE (4)
PR: GMS 6600-GMS 6300 or CC.

GMS 6409 PERIPHERAL CIRCULATION AND HEMODYNAMICS (4)
PR: GMS 6600-GMS 6300 or CC.

GMS 6410 CARDIOVASCULAR REGULATION (4)
PR: GMS 6400. Consent of Chairman of Physiology.

GMS 6413 PHYSIOLOGICAL BASIS OF CARDIOLOGY (4)
PR: GMS 6600-GMS 6300 or CC.

PSYCHIATRY

BMS 6840 INTRODUCTION TO BEHAVIORAL SCIENCES (var.)
PR: Admission to College of Medicine.

BMS 6850 PSYCHIATRY SEMINAR (0)
PR: GMS 6600-GMS 6300 or CC.

BMS 6880 BIOSTATISTICS (var.)
PR: Admission to College of Medicine.

BCC 6150 PSYCHIATRY CLERKSHIP (var.)
PR: Admission to College of Medicine.

MEL 7602 ELECTIVE IN CHILD PSYCHIATRY (var.)
PR: Enrolled in College of Medicine.

MEL 6707 PSYCHIATRY AND MEDICAL PRACTICE (var.)
PR: Enrolled in the College of Medicine.

MEL 7611 ADVANCED CLERKSHIP IN PSYCHIATRY (var.)
PR: Enrolled in College of Medicine.

MEL 8664 PSYCHIATRIC RESEARCH (var.)

RA/DIOLOGY

MEL 7700 GENERAL RADIOLOGY (var.)
PR: Enrolled in College of Medicine.

SURGERY

BCC 6160 SURGERY CLERKSHIP (var.)
PR: Admission to College of Medicine.

MEL 7760 ANESTHESIOLOGY ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7800 GENERAL SURGERY ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7801 GENERAL SURGERY PRECEPTORSHIP (var.)
PR: Enrolled in College of Medicine.

MEL 7805 PLASTIC AND RECONSTRUCTIVE SURGERY ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7806 PLASTIC SURGERY PRECEPTORSHIP (var.)
PR: Enrolled in College of Medicine.

MEL 7807 THORACIC SURGERY ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7812 NEUROSURGERY ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7813 OTOLARYNGOLOGY ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7816 OTOLARYNGOLOGY PRECEPTORSHIP (var.)
PR: Enrolled in College of Medicine.

MEL 7817 ORTHOPEDIC ELECTIVE-INPATIENT (var.)
PR: Enrolled in College of Medicine.

MEL 7821 SURGERY OF THE HAND ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7822 CLINICAL UROLOGY ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7823 ORTHOPAEDIC ELECTIVE (var.)
PR: Enrolled in College of Medicine.

MEL 7824 ORTHOPAEDIC ELECTIVE-OUTPATIENT (var.)
PR: Enrolled in College of Medicine.

COLLEGE OF NATURAL SCIENCES

ASTRONOMY

UNDERGRADUATE COURSES

AST 2005 ASTRONOMY OF THE SOLAR SYSTEM (4)
Introduction to the Astronomy of the Solar System. Course level assumes no Physics or Mathematics background. Only simple math will be used. Topics covered include properties of light, stellar coordinates, timekeeping, eclipses, formation and dynamics of the solar system, properties of the sun and planets, space exploration of planets and the moon, life on other worlds. This course is complementary to but independent of AST 2006. Either may be taken before the other or taken by itself.

AST 2006 STELLAR ASTRONOMY AND COSMOLOGY (4)
An introduction to Astrophysics and the structure of the universe. Course level assumes no Physics or Mathematics background. Only simple math will be used. Topics covered include properties of light, stellar coordinates, measurement of the physical properties of stars, formation, structure, and evolution of stars, normal and peculiar galaxies, cosmology. This course is complementary to but independent of AST 2005. Either may be taken before the other or taken by itself.

AST 2032C ILLUSTRATIVE ASTRONOMY (3)
Constellations, use of small telescopes, etc., apparent motions of celestial objects, comets and meteors, seasons and weather. Current events in the space program. Planetarium and open sky demonstrations. Lec.-lab.

AST 3033 CONTEMPORARY THINKING IN ASTRONOMY (3)
PR: Junior or Senior Standing or CI. Seminar designed to assist the layman, with no scientific background, in comprehending contemporary developments in Astronomy. Necessary background material is provided by the instructor and a text. No experience in astronomy, physics, or mathematics is necessary. Topics covered in recent years include the space program, pulsars, x-ray astronomy, black holes, extra-terrestrial life, interacting galaxies, cosmology.

AST 3043 HISTORY OF THE SCIENCE OF ASTRONOMY (3)
To familiarize seriously interested students with the history of astronomy and the influence of this discipline on the development of human knowledge.
AST 3652 NAVIGATION (2)
PR: Some knowledge of geometry, algebra and trigonometry. Timekeeping, use of sextant, constellations, navigation with minimum equipment, some spherical astronomy.

AST 3930 SELECTED TOPICS IN ASTRONOMY (1-4)
PR: CI. Course content will depend upon the interest of the faculty member and student demand. May be repeated up to 8 credit hours.

GRADUATE COURSES

AST 5506 INTRODUCTION TO CELESTIAL MECHANICS (3)
PR: MAC 3413 and some knowledge of differential equations, or CI. The two body problem, introduction to Hamiltonian systems and canonical variables, equilibrium solutions and stability, elements of perturbation theory.

AST 5932 SELECTED TOPICS IN ASTRONOMY (1-5)
PR: Senior or advanced junior standing or CI. Intensive coverage of special topics to suit needs of advanced students.

BIOLOGY

UNDERGRADUATE COURSES

APB 2103 PLANTS & HUMAN AFFAIRS (3)

APB 2130 ENVIRONMENT (3)
PR: BSC 2933. The application of basic principles of ecology to relevant problems and topics relating to man's environmental interaction through consideration of scientific and popular literature. For non-majors.

APB 2140 FOODS AND DRUGS (3)
PR: BSC 2933. The application of basic biological principles to relevant problems and topics in nutrition and drugs through the consideration of scientific and popular literature. For non-majors.

APB 2250 SEX, REPRODUCTION AND POPULATION (3)
PR: BSC 2933. The application of basic biological principles from subject areas to relevant problems and topics through the consideration of scientific and popular literature. For non-majors.

APB 3110 MAN, MICROBE AND MOLECULE (3)
PR: BSC 2933 or CI. Origin of life, control of diseases, environmental quality and the use of microorganisms as tools in searching for molecular explanations of living phenomena. For non-majors.

BOT 4663 INTRODUCTION TO TROPICAL BIOLOGY (4)
PR: 1 year major's Biology or CI. The tropical environment and its effect on plant and animal communities. Plant and animal interactions and man's impact on the environment.

BSC 2010C FUNDAMENTALS OF BIOLOGY (4)
A brief review of living organisms, respiration, photosynthesis, cell structure, and specialization. Lec.-lab.

BSC 2011C FUNDAMENTALS OF BOTANY (4)
PR: BSC 2010C. Cell division, genetics, reproduction and development, physiology. Lec.-lab.

BSC 2012C FUNDAMENTALS OF ZOOLOGY (4)

BSC 2932 SELECTED TOPICS (1-4)
PR: CI.

BSC 2933 TOPICS IN HUMAN BIOLOGY (3)
Lectures, individual reading, movies, classroom discussions, and evaluation of selected biological topics, reflecting biological principles. For non-majors.

BSC 3263 INTRODUCTORY MARINE BIOLOGY (3)
PR: 1 year major's Biology or CI. An introduction to the marine environment, the types of organisms found inhabiting a variety of marine habitats, and the adaptations of the organisms to those habitats. Emphasis is placed on shallow water Florida environments. Majors and non-majors.

BSC 4901 INDEPENDENT STUDY (1-3)
PR: CI. Specialized independent study determined by the student's needs and interests. The written contract required by the College of Natural Sciences specifies the regulations governing independent study. May be repeated. (S/U only.)

BSC 4910 UNDERGRADUATE RESEARCH (1-4)
PR: CI. Individual investigation with faculty supervision. (S/U only.)

BSC 4930 SEMINAR IN BIOLOGY (1)
PR: CI. Senior or advanced junior standing. May be repeated up to 8 credit hours. (S/U only.)

BSC 4933 SELECTED TOPICS IN BIOLOGY (1-3)
PR: CI.

PCB 3063 GENERAL GENETICS (3)
PR: 1 year major's Biology. Introduction to genetics including the fundamental concepts of Mendelian, molecular and population genetics.

PCB 3183C HISTOLOGICAL TECHNIQUES (4)
PR: 1 year major's Biology. Theory and practice of tissue fixation, imbedding, sectioning, and staining; chromosomal squash preparations; nuclear isolation techniques; photomicrography. Lec.-lab.

PCB 4023C CELL BIOLOGY (4)
PR: CHM 3211, CHM 3211L and PCB 3063. A discussion of the concept and significance of the cell to biology; biological molecules and metabolic processes within the cell; cellular energy conversion systems; and control of cellular metabolism.

PCB 4043C PRINCIPLES OF ECOLOGY (3)
PR: 1 year major's Biology. An introduction to the basic principles and concepts of ecology at the ecosystem, community, and population level of organization. Lec.-dis.

PCB 4064 EXPERIMENTAL GENETICS (2)
CR: PCB 3063 or CI. Experimental analysis of genetic systems. Lec.-lab.

PCB 4074 ORGANIC EVOLUTION (3)
PR: PCB 3063 or CI. An introduction to modern evolutionary theory. Lecture on population genetics, adaptations, speciation theory, phylogeny, human evolution and related areas.

GRADUATE COURSES

BSC 5931 SELECTED TOPICS IN BIOLOGY (1-3)
PR: CI. Each topic is a course in directed study under supervision of a faculty member.

BSC 6907 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

BSC 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

BSC 6912 GRADUATE RESEARCH METHODS (1-4)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credits per student. (S/U only.)

BSC 6932 SELECTED TOPICS IN BIOLOGY (1-4)
PR: CI.

BSC 6935 GRADUATE SEMINAR IN BIOLOGY (1)
PR: CI. (S/U only.)

BSC 6945 GRADUATE INSTRUCTION METHODS (1-3)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 4 credits per student. (S/U only.)

BSC 7912 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

BSC 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

PCB 5115C CYTOGENETICS (3)
PR: PCB 4023C. Survey of the structure and function of cytoplasmic and nuclear components of plant and animal cells. Lec.-lab.

PCB 5235C PRINCIPLES OF IMMUNOLOGY (3)
PR: PCB 4023C or CI. Course will emphasize the biological principles involved in the vertebrate immune response. It will
present the homeostatic, defense, and detrimental aspects of the immune system in terms of basic cellular and molecular mechanisms. Techniques will be described to familiarize the student with the types of immunological tools available to the cellular and molecular biologist.

**PCB 5525 MOLECULAR GENETICS** (3)
PR: PCB 3063. Detailed examination of DNA, RNA and protein synthesis; the effects of mutations on proteins, cellular control; selected aspects of viral, bacterial, and fungal genetics.

**PCB 5615 EVOLUTIONARY GENETICS** (3)
PR: PCB 3063 or CI. Examination of factors such as mutation, migration, natural selection, and genetic drift which modify the genetic structure of populations.

**PCB 5835C NEUROPHYSIOLOGY** (3)
PR: PCB 4743C. A comparative analysis of the physiochemical basis and evolution of nervous systems and sensory mechanisms.

**PCB 6176C ULTRASTRUCTURE TECHNIQUES IN ELECTRON MICROSCOPY** (4)

**PCB 6356 TROPICAL ECOLOGY** (2)
PR: PCB 4043C. Graduate Standing or CI. A discussion of a series of related ecological topics to illustrate the features peculiar to the tropics.

**PCB 6426C POPULATION BIOLOGY** (3)
PR: PCB 4043C or CI. Introduction to population dynamics with emphasis on the ecological components of population growth, competition, and predation.

**PCB 6456C BIOMETRY** (3)
PR: MAC 2243 and MAC 2244 or CI. An introduction to statistical procedures for research in the biological sciences. Experimental design, analysis of data, and presentation of results are emphasized.

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**Botany**

**UNDERGRADUATE COURSES**

**BOT 3143C FIELD BOTANY** (3)
PR: BSC 2011C or CI. Identification and classification of native and naturalized flowering plants of Florida including historical, climatic and floristic aspects of plant communities. Conducted largely in the field. Lec.-lab.

**BOT 3823C HORTICULTURAL BOTANY** (2)
PR: Course in botany, biology or CI. Application of principles of botany to give an understanding of basic horticultural operations; seed sowing, dormancy growth requirements, vegetative propagation, pruning, and related problems. Lec.-lab.

**BOT 4223C PLANT ANATOMY** (3)
PR: BSC 2011C. Comparative studies of tissue and organ systems of fossil and present-day vascular plants. Functional and phylogenetic aspects stressed. Lec.-lab.

**BOT 4434C MYCOLOGY** (3)
PR: BSC 2011C or CI. A survey of the fungi with emphasis on their taxonomy, morphology, physiology and economic importance. Lec.-lab.

**BOT 4503 PLANT PHYSIOLOGY** (4)
PR: PCB 4023C. Fundamental activities of plants; absorption, translocation, transpiration, metabolism, growth, and related phenomena. Lec.-lab.

**BOT 4713C PLANT TAXONOMY** (4)
PR: BSC 2011C. Identification and classification of the more interesting vascular plants of Florida; angiosperm evolution; principles of taxonomy. Conducted largely in the field.

**BOT 4933 SEMINAR IN BOTANY** (1)
PR: Senior or advanced junior standing and CI. May be repeated once. (S/U only.)

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**Graduate Courses**

**BOT 5185* MARINE BOTANY** (3)
PR: BSC 2011C, PCB 4043C or CI. A field course in marine plants with emphasis on ecology and functional morphology. Field work will stress the ecological aspects of plants in a subtropical marine environment in Florida. Lec.-lab.

**BOT 5405* PHYCOLOGY** (3)
PR: BSC 2011C or CI. A detailed survey of the algae emphasizing both taxonomy and morphology of fresh and marine water forms; field and laboratory investigations, including individual projects. Lec.-lab.

**BOT 5605C* PLANT ECOLOGY** (3)
PR: BSC 2011C, PCB 4043C or CI. Distribution and nature of vegetation in relation to climatic, physiographic, edaphic, and biotic factors; field investigations of subtropical Florida plant communities. Lec.-lab.

**BOT 5723C EVOLUTION OF FLOWERING PLANTS** (3)
PR: BSC 4713C or CI. A phylogenetic study of Angiosperm; relationship of the principal orders and families, problems of nomenclature, identification of specimens, comparisons of recent systems of classification, dissection of representative flower types. Field trips and lab work. Lec.-lab.

**BOT 5938 SELECTED TOPICS IN BOTANY** (1-3)
PR: CI. Each topic is a course in direct study under supervision of a faculty member.

**BOT 6516 PLANT BIOCHEMISTRY** (2)
PR: BSC 4503 or CI. A study of plant metabolism with emphasis on the biosynthetic pathways and their regulation.

**BOT 6516L LABORATORY IN PLANT BIOCHEMISTRY** (3)
PR: BSC 4503 or CI. An intensive exposure to the methods used in experimenting with plant material.

**BOT 6716C BIOCHEMICAL SYSTEMATICS** (4)
PR: BOT 3713C or equivalent. Application of cytology, ecology, genetics, biochemistry, and morphological analysis to the study of evolution and classification of species of higher plants. Lec.

**BOT 6916 INDEPENDENT STUDY** (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

**BOT 6971 THESIS: MASTER'S** (var.)
Repeatable. (S/U only.)

*Students will be required to pay travel expenses for field trips.

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**Microbiology**

**UNDERGRADUATE COURSES**

**APB 4053C APPLIED AND ENVIRONMENTAL MICROBIOLOGY** (5)
PR: MCB 3010C. A study of the applications of microbiology to industry, agriculture, medicine, and sanitary engineering. Lec.-lab.

**MCB 3010C INTRODUCTION TO MICROBIOLOGY** (4)
PR: BSC 2010C and 1 year College Chemistry. Organic chemistry and a course in genetics is recommended. Introduction to the biology of microorganisms: structure, physiology, and ecology of bacteria, algae, viruses, protozoa and lower fungi. The laboratory involves preparation of culture media, staining, pure culture methodology, isolation of microbes from nature, enumeration techniques, resistance to infectious disease.

**MCB 4115 DETERMINATIVE BACTERIOLOGY** (5)
PR: MCB 3010C. Survey of bacterial classification; detailed examinations of bacteria important to man in agriculture, in industry and as pathogens. Lec.-lab.

**MCB 4404 MICROBIAL PHYSIOLOGY** (4)
PR: MCB 3010C, PCB 4023C or CI. A study of physiological and metabolic phenomena pertinent to the growth, development, regulation, inhibition and death of microorganisms and to the chemical alterations they catalyze.

**MCB 4505C VIROLOGY** (3)
PR: MCB 3010C. The biology of viruses associated with plants, animals, and bacteria will be considered; the nature of viruses, mechanisms of viral pathogenesis, and interactions with host cells.

**MCB 4934 SEMINAR IN MICROBIOLOGY** (1)
PR: Senior or advanced junior standing and CI. May be repeated. (S/U only.)
Graduate Courses

APB 5575C MEDICAL MYCOLOGY (4)
PR: MCB 3010C or CI. A survey of the yeasts, molds, and actinomycetes most likely to be encountered by the bacteriologists, with special emphasis on the forms pathogenic for man.

MCB 5206 PUBLIC HEALTH AND PATHOGENIC MICROBIOLOGY (3)
PR: MCB 3010C. A comprehensive survey of pathogenic microbes responsible for disease in man and other animals and the impact of these infectious agents on the public health. These pathogens will be studied with respect to their morphology, cultivation, mechanisms of pathogenicity, laboratory diagnosis, and epidemiology.

MCB 5605 MICROBIAL ECOLOGY (4)
PR: MCB 3010C, CI. A study of the theory and methodology of the quantification of microbial processes in natural habitats with special emphasis on aquatic and terrestrial systems. Lec.-lab.

MCB 5936 SELECTED TOPICS IN MICROBIOLOGY (1-3)
PR: CI. Each topic is a course in directed study under supervision of a faculty member.

MCB 6459 ADVANCED TOPICS IN CHEMICAL MICROBIOLOGY (2)
PR: MCB 4404, Biochemistry or CI. An in-depth study of microbial and physiological phenomena associated with microorganisms, especially bacteria, including: growth, regulations, unique metabolic traits, morphogenesis, cell division, cell death and survival mechanisms.

MCB 6919 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

MCB 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

PCB 6126 ADVANCED IMMUNOLOGY (4)
PR: CI. Discussion of the basic immune reaction, nature of antigenicity, basic immunological techniques and their use in biological research and the medical sciences.

PCB 6606 BACTERIAL GENETICS (3)
PR: MCB 4404, PCB 3063 or CI. A survey of the recombination phenomena found among the bacteria and bacterial viruses with emphasis on the molecular mechanisms of gene transfer, replication and expression and on the significance of these systems for our understanding of cellular functions.

Zoology

Undergraduate Courses

ENY 4004 INTRODUCTION TO ENTOMOLOGY (3)
PR: ZOO 3203C or ZOO 3823C. An introduction to general aspects of insect morphology, development, and classification. The identification of local forms will be emphasized. Lec.-lab.

PCB 3700 HUMAN ANATOMY AND PHYSIOLOGY (5)
PR: BSC 2010C and BSC 2012C. Lectures and discussions on the functional basis of the human body. For non-majors.

PCB 4184C HISTOLOGY (4)
PR: BSC 2012C. Comparative approach to the study of tissues and the relation of their structure and function. Lec.-lab.

PCB 4253C DEVELOPMENTAL BIOLOGY (4)
PR: PCB 4023C. Structural and functional events involved in differentiation and morphogenesis. Lec.-lab.

PCB 4743C ANIMAL PHYSIOLOGY (4)
PR: PCB 4023C. Advanced presentation of mechanisms employed by animals to interact with their environment and to maintain their organization.

ZOO 3203C INVERTEBRATE ZOOLOGY (4)
PR: BSC 2012C. An introduction to the major invertebrate groups, with emphasis on local forms. Field work will be required. Lec.-lab.

ZOO 3713C COMPARATIVE VERTEBRATE ANATOMY (4)
PR: BSC 2012C. Anatomy of selected vertebrate types emphasizing evolutionary trends. Lec.-lab.

ZOO 3823C BIOLOGY OF TERRESTRIAL ARTHROPODS (4)
PR: BSC 2012C. An introduction to the biology of insects, spiders, and centipede and millipede groups. Lectures and laboratories will emphasize anatomy, physiology, behavior, and ecology of these organisms. Field work will be required.

ZOO 4503 ANIMAL SOCIAL BEHAVIOR (4)
PR: CI. An introduction to comparative animal behavior (Ethology), with emphasis on communication, social use of space, and behavioral evolution.

ZOO 4583C PRIMATE SOCIAL BEHAVIOR (3)
PR: ZOO 4503C. An introduction to primate social behavior and behavioral ecology.

ZOO 4893 WILDLIFE AND FISH MANAGEMENT (2)
PR: BSC 2012C and PCB 4043C. An introduction to the principles of wildlife and fisheries management. Certain methods and techniques utilized in the management of exploited animal species will be introduced. Designed primarily for students interested in the wildlife and fish management profession.

Graduate Courses

ENY 5502 AQUATIC ENTOMOLOGY (3)
PR: ENY 4004. Taxonomy, development, and ecology of aquatic insects with emphasis on local forms. Lec.-lab.

PCB 506C LIMNOLOGY (4)
PR: CI. An introduction to the physical, chemical, and biological principles of freshwater environments. Lec.-lab.

PCB 5325C TERRESTRIAL ANIMAL ECOLOGY (3)
PR: PCB 4043C. Field and laboratory investigations of the basic principles of ecology as applied to terrestrial animals. Lec.-lab.

PCB 5725C COMPARATIVE PHYSIOLOGY (4)
PR: PCB 4023C. The evolution of physiological mechanisms. Lec.-lab.

PCB 676C PHYSIOLOGICAL ECOLOGY (4)
PR: CI. Effect of environmental factors on animal function at the cellular and organ system level with emphasis on control and mechanism. Lec.-lab.

PCB 6756 COMPARATIVE METABOLISM (2)
PR: PCB 4023C and BCH 3033. Some knowledge of Animal Physiology will be assumed. A presentation of various metabolic pathways found in invertebrate animals including specializations related to parasitism and facultative anaerobiosis.

PCB 6816 COMPARATIVE ENDOCRINOLOGY (3)
PR: PCB 5725C or CI. An analysis of the similarities and differences between the hormonal mechanisms of mammals, other vertebrates, and invertebrates. Lecture only.

ZOO 5235C PARASITOLOGY (4)
PR: BSC 2012C. Fundamentals of animal parasitology and parasitism, the biology of selected animal parasites, including those of major importance to man. Lec.-lab.

ZOO 5425 HERPETOLOGY (3)
PR: ZOO 3713C or CI. Major aspects of amphibian and reptilian biology emphasizing fossil history, evolutionary morphology, sensory physiology, life history and reproductive behavior. Lec.-lab. Field trip.

ZOO 5455C ICHTHYOLOGY (4)
PR: ZOO 3713C or CI. Systematics of fishes, including major classification, comparative anatomy, embryology, and general distribution. Lec.-lab. (Also offered under Marine Science).

ZOO 5475C ORNITHOLOGY (4)

ZOO 5485C MAMMALOGY (4)
PR: ZOO 3713C or CI. The biology of mammals, including systematic, ecology, natural history, and geographical distribution. Lec.-lab.

ZOO 5555C MARINE ANIMAL ECOLOGY (4)
PR: PCB 4043C and ZOO 3203C. Investigation of energy flow, biogeochemical cycles, and community structure in marine environments. Lec.-lab.

ZOO 5815C BIOGEOGRAPHY (3)
Principles and general patterns of terrestrial and marine animal and plant distributions.
CHM 5020 CURRENT ISSUES IN CHEMISTRY (3)
A survey of the important current issues in which chemistry affects our lives; e.g., environment, drugs, cancer, warfare, etc. No credit for chemistry majors.

CHM 3120C ELEMENTARY ANALYTICAL CHEMISTRY (4)
PR: CHM 2046, CHM 2046L, or CHM 2055C. Fundamentals of gravimetric, volumetric, spectrophotometric analysis. Lec.-lab.

CHM 3200 ELEMENTARY ORGANIC CHEMISTRY (4)
PR: CHM 2046 or equivalent. Fundamental organic chemistry principles. Structure, nomenclature, properties, preparation, reactions of hydrocarbons, alkyl halides, alcohols, phenols, ethers, sulfur analogs and other compounds.

CHM 3210 ORGANIC CHEMISTRY I (3)
PR: CHM 2046, CHM 2046L, CHM 2055C. Fundamental principles of organic chemistry. Lecture.

CHM 3210L ORGANIC CHEMISTRY LABORATORY I (2)

CHM 3211L ORGANIC CHEMISTRY LABORATORY II (3)
PR: CHM 3210 or equivalent. Continuation of organic chemistry. Lecture.

CHM 3211L ORGANIC CHEMISTRY LABORATORY II (2)

CHM 3400 ELEMENTARY PHYSICAL CHEMISTRY I (3)
PR: CHM 2046, CHM 2046L, or CHM 2055C, MAC 2044, MAC 2243, PHY 2051, PHY 2052, PHY 2051L. Introduction to the thermodynamics. Properties of solutions with emphasis on biological applications.

CHM 3401 ELEMENTARY PHYSICAL CHEMISTRY II (3)
PR: CHM 3400. Reaction kinetics, enzyme kinetics, macromolecular systems, radiochemistry, molecular spectroscopy, and chemical bonding.

CHM 3402L ELEMENTARY PHYSICAL CHEMISTRY LABORATORY (1)
CR: CHM 3400 and/or CHM 3401. A physical chemistry laboratory with emphasis on modern techniques and instruments. Lab.

CHM 3610C INTERMEDIATE INORGANIC CHEMISTRY (4)
PR: CHM 2046, CHM 2046L, or CHM 2055C. Fundamental principles of inorganic chemistry. Lec.-lab.

CHM 4060 USE OF THE CHEMICAL LITERATURE (1)
Discussions and assignments using abstracts, bibliographies, indices, encyclopedias, journals, patent files, and other information sources to obtain chemical and technical material and including written and oral presentations. Career information and opportunities also discussed.

CHM 4070 HISTORICAL PERSPECTIVES IN CHEMISTRY (3)
PR: CHM 2046; or senior standing, and CI. A study in depth of the historical and philosophical aspects of outstanding chemical discoveries and theories. Lec.-dis.

CHM 4130C METHODS OF CHEMICAL INVESTIGATION I (4)
PR: CHM 3120C, CHM 3211, CHM 3211L, CHM 4060, CHM 4410. Theory and applications of instrumental methods in chemical research, chemical synthesis and analysis; electrochemical and calorimetric techniques, separation methods, spectroscopy, statistical analysis of data, computer data handling, and individual projects.

CHM 4131C METHODS OF CHEMICAL INVESTIGATION II (4)
PR: CHM 4130C. Continuation of CHM 4130C.

CHM 4300 BASIC BIO-ORGANIC CHEMISTRY (3)
PR: CHM 3211. Nature, structure, elucidation, synthesis and (in selected cases) organic chemical mechanisms of biochemical involvement of the major classes of organic compounds found in living systems. Lec.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>CHM 4410</td>
<td>PHYSICAL CHEMISTRY I</td>
<td>(3)</td>
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<tr>
<td></td>
<td>PR: CHM 3120C and MAC 3282 or MAC 3412, and PHY 2052 or PHY 3042. Thermodynamics, the states of matter, solutions.</td>
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<tr>
<td>CHM 4411</td>
<td>PHYSICAL CHEMISTRY II</td>
<td>(3)</td>
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<td>PR: CHM 4410. Introduction to quantum mechanics and molecular spectroscopy.</td>
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<tr>
<td>CHM 4412</td>
<td>PHYSICAL CHEMISTRY III</td>
<td>(3)</td>
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<td>PR: CHM 4410. Electrochemistry, kinetic theory of gases, chemical kinetics, surface and nuclear chemistry.</td>
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<tr>
<td>CHM 4610</td>
<td>ADVANCED INORGANIC CHEMISTRY</td>
<td>(3)</td>
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<td>PR: CHM 4410 or CI. An advanced theoretical treatment of inorganic compounds.</td>
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<tr>
<td>CHM 4905</td>
<td>INDEPENDENT STUDY</td>
<td>(1-3)</td>
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<td>PR: CI. Specialized independent study determined by the student's needs and interests. The written contract required by the College of Natural Sciences specifies the regulations governing independent study. May be repeated. (S/U only.)</td>
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<tr>
<td>CHM 4932</td>
<td>SELECTED TOPICS IN CHEMISTRY</td>
<td>(1-3)</td>
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<td>PR: CI. The course content will depend on the interest of faculty members and student demand.</td>
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<tr>
<td>CHM 4970</td>
<td>UNDERGRADUATE RESEARCH</td>
<td>(1-3)</td>
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<td>PR: CI. (S/U only.)</td>
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<tr>
<td>CHS 4100C</td>
<td>RADIOCHEMISTRY</td>
<td>(3)</td>
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<td>PR: CHM 3120. Theory and applications of natural and induced radioactivity. Emphasis on the production, properties, measurement, and uses of radioactive tracers. Lec.-lab.</td>
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<tr>
<td>CHS 4300</td>
<td>FUNDAMENTALS OF CLINICAL CHEMISTRY</td>
<td>(3)</td>
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<td>PR: BCH 3033. Theoretical and practical aspects of the analysis of various body fluids, with emphasis on the medical significance. Clinical chemistry majors must take CHS 4301L concurrently.</td>
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<tr>
<td>CHS 4301L</td>
<td>CLINICAL LABORATORY</td>
<td>(1)</td>
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<td>PR: BCH 3033 and CI. CHM 3120C. Laboratory experience in some of the most important clinical determinations. CHS 4300 must be taken concurrently. Lec.-lab.</td>
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<tr>
<td>CHS 4302</td>
<td>CLINICAL CHEMISTRY PRACTICE</td>
<td>(2-8)</td>
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<td>PR: CI. Laboratory practice in clinical chemistry laboratories in the Tampa Bay area. (S/U only.)</td>
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<tr>
<td>CHS 4310C</td>
<td>INSTRUMENTAL ANALYSIS</td>
<td>(5)</td>
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<td>PR: CHM 4412 or CI. Theory and practice of instrumental methods of chemical analysis. Lec.-lab.</td>
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**GRADUATE COURSES**

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BCH 5065</td>
<td>BIOCHEMISTRY CORE COURSE</td>
<td>(3)</td>
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<tr>
<td></td>
<td>PR: Either CHM 3211, CHM 3211L, and CHM 3400 or CHM 4410 or graduate standing. A one-semester survey course in biochemistry for graduate students in chemistry, biology, and other appropriate fields and for particularly well-qualified undergraduates.</td>
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<tr>
<td>BCH 5066</td>
<td>GENERAL BIOCHEMISTRY I</td>
<td>(3)</td>
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<tr>
<td></td>
<td>PR: BCH 5065 or CI. First semester of a rigorous two-semester general biochemistry course for chemistry and biology graduate students whose primary interests are in this field.</td>
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<tr>
<td>BCH 6067</td>
<td>GENERAL BIOCHEMISTRY II</td>
<td>(3)</td>
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<td>PR: BCH 6066. Continuation of General Biochemistry I.</td>
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<tr>
<td>BCH 6506</td>
<td>ADVANCED BIOCHEMISTRY I. ENZYMES</td>
<td>(3)</td>
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<td>PR: BCH 6067 or CI. A study of biochemical systems with emphasis on enzymes.</td>
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<tr>
<td>BCH 6706</td>
<td>ADVANCED BIOCHEMISTRY II. BIOORGANIC MECHANISMS</td>
<td>(3)</td>
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<td>PR: BCH 6067 or CI. A study of biochemical systems with emphasis on mechanisms of biological reaction.</td>
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<tr>
<td>BCH 6746</td>
<td>ADVANCED BIOCHEMISTRY III. BIOPHYSICAL CHEMISTRY</td>
<td>(3)</td>
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<td>PR: BCH 6067 or CI. A study of biochemical systems with emphasis on physical methods of experimentation and interpretation.</td>
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<tr>
<td>CHM 5425</td>
<td>APPLICATIONS IN PHYSICAL CHEMISTRY</td>
<td>(3)</td>
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<tr>
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<td>PR: CHM 4412. Applications of chemical theory to chemical systems.</td>
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<tr>
<td>CHM 5430</td>
<td>CHEMICAL THERMODYNAMICS</td>
<td>(3)</td>
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<td>PR: CHM 4412 or CI. The applications of thermodynamic theory to the study of chemical systems with emphasis on the energetics of reactions and chemical equilibria.</td>
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<tr>
<td>CHM 5621</td>
<td>PRINCIPLES OF INORGANIC CHEMISTRY</td>
<td>(3)</td>
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<td>PR: CHM 4411 or CI. Chemical forces, reactivity, periodicity, and literature in inorganic chemistry; basic core course.</td>
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<tr>
<td>CHM 5931</td>
<td>SELECTED TOPICS IN CHEMISTRY</td>
<td>(3)</td>
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<td>PR: CI. The following courses are representative of those that are taught under this title: Natural Products, Stereochmistry, Reactive Intermediates, Photochemistry, Instrumental Electronics, Advanced Lab Techniques, Heterocyclic Chemistry, etc.</td>
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<tr>
<td>CHM 6150</td>
<td>ADVANCED ANALYTICAL CHEMISTRY</td>
<td>(3)</td>
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<td>PR: CI. A study of complete analytical process, including sample handling, separations, the analysis step, and statistical interpretation of data. Emphasis placed on separations and statistics.</td>
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<tr>
<td>CHM 6153</td>
<td>ELECTROCHEMISTRY</td>
<td>(3)</td>
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<tr>
<td>CHM 6250</td>
<td>ADVANCED ORGANIC CHEMISTRY I. SYNTHESIS</td>
<td>(3)</td>
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<td>PR: CHM 5225. Detailed consideration of modern synthetic methods.</td>
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<td>CHM 6260</td>
<td>ADVANCED ORGANIC CHEMISTRY II. PHYSICAL-ORGANIC</td>
<td>(3)</td>
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<tr>
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<td>PR: CHM 5225. A study of organic reaction mechanisms emphasizing the interpretation of experimental data.</td>
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<tr>
<td>CHM 6280</td>
<td>ADVANCED ORGANIC CHEMISTRY III. NATURAL PRODUCTS</td>
<td>(3)</td>
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<td></td>
<td>PR: CHM 5225 or CI. A study of any of several of the following topics: terpenes, steroids, vitamins, alkaloids, prophyrins, purine, and antibiotics.</td>
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<tr>
<td>CHM 6440</td>
<td>CHEMICAL KINETICS</td>
<td>(3)</td>
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<tr>
<td></td>
<td>PR: CI. Theory and methods for the study of reaction rates and the elucidation of reaction mechanisms.</td>
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<tr>
<td>CHM 6460</td>
<td>STATISTICAL THERMODYNAMICS</td>
<td>(3)</td>
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<tr>
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<td>PR: CI. Application of statistical mechanics to thermodynamics, the relation of molecular structure to thermodynamic properties.</td>
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<tr>
<td>CHM 6480</td>
<td>QUANTUM CHEMISTRY</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>PR: CI. Introduction to elementary quantum mechanism, Atomic structure and spectra.</td>
<td></td>
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<tr>
<td>CHM 6625</td>
<td>CHEMISTRY OF THE LESS FAMILIAR ELEMENTS</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>PR: CI. An integrated treatment of the conceptual and factual aspects of the traditionally less familiar elements, including noble gases, unfamiliar non-metals, alkali and alkaline-earth metals and the transition elements.</td>
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<tr>
<td>CHM 6650</td>
<td>STRUCTURAL INORGANIC CHEMISTRY</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>PR: CHM 5621 or CI. Modern theories of bonding and structure of inorganic compounds, including coordination theory, stereochemistry, solution equilibria, kinetics, mechanisms of reactions, and use of physical and chemical methods.</td>
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<tr>
<td>CHM 6907</td>
<td>INDEPENDENT STUDY</td>
<td>(var.)</td>
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<tr>
<td></td>
<td>Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)</td>
<td></td>
</tr>
<tr>
<td>CHM 6935</td>
<td>GRADUATE SEMINARS IN CHEMISTRY</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>PR: Admission to graduate program in chemistry. Required every semester (when offered) for all students enrolled in chemistry graduate program. Requires participation in and attendance at the weekly departmental seminar. Must be repeated. (S/U only.)</td>
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<tr>
<td>CHM 6936</td>
<td>CHEMISTRY COLLOQUIUM</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>PR: Admission to graduate program in chemistry. Frequent (usually weekly) small-group analysis of current developments. May be repeated up to a cumulative total of 10 hours. (S/U only.)</td>
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<tr>
<td>CHM 6938</td>
<td>SELECTED TOPICS IN CHEMISTRY</td>
<td>(1-3)</td>
</tr>
<tr>
<td></td>
<td>PR: CI. The following titles are representative of those that are</td>
<td></td>
</tr>
</tbody>
</table>
taught under this title: Symmetry and Group Theory, Photophysical Kinetics, Quantum Mechanical Calculations, Advanced Chemical Thermodynamics, Reaction Mechanisms, Advanced Instrumentation, Separations and Characterizations, Spectroscopy, etc.

**CHM 6946 GRADUATE INSTRUCTION METHODS (1-4)**
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

**CHM 6947 GRADUATE RESEARCH METHODS (1-4)**
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

**CHM 6971 THESIS: MASTER'S (var.)**
Repeatable. (S/U only.)

**CHM 6973 DIRECTED RESEARCH (var.)**
PR: GR. Master's level. Repeatable. (S/U only.)

**CHM 7820 DIRECTED RESEARCH (var.)**
PR: GR. Ph.D. level. Repeatable. (S/U only.)

**CHM 7980 DISSERTATION: DOCTORAL (var.)**
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

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**GEOLoGY**

**UNDERGRADUATE COURSES**

**GLY 2016 PHYSICAL GEOLOGY (4)**
Study of minerals, rocks, and processes of the earth's crust. Introduction to origin and classification of earth's materials and landforms. Lec.-lab.

**GLY 2100 EARTH HISTORY (4)**
Study of the physical and biological history of the earth including evolution of the major groups of organisms, continental drift, and interpretation of ancient environments. Lec.-lab.

**GLY 2850 ENVIRONMENTAL GEOLOGY (3)**
A first course in geology emphasizing environmental aspects of the earth's crust such as earthquakes, depletion of the earth's resources, water supply problems, and geologic land use and planning. No credit for geology majors.

**GLY 3006 GEOLOGY OF OUR NATION'S PARKS (3)**
Representative parks used to illustrate current concepts in geology. For the non-science student. No credit of geology majors.

**GLY 3400 STRUCTURAL GEOLOGY (4)**
PR: 12 hours of geology, MAC 1104 or equivalent or CI. Study of the origin and development of structural features of the earth's crust. Applications of principles of geology, physics, and mathematics to understanding relationships of strata and interpreting structural features. Study of regional tectonics and major structural provinces. Lec.-lab.

**GLY 3610 PRINCIPLES OF INVERTEBRATE PALEONTOLOGY (4)**
PR: GLY 2100 or CI. Emphasis on morphology and habits of fossil invertebrate groups as they evolved through geologic time. Comparisons with modern examples or similar organisms. Stratigraphic distribution of major groups. Lec.-lab.

**GLY 3820 INTRODUCTION TO HYDROGEOLOGY (4)**
PR: Eight hours of geology, MAC 1104 or equivalent, or CI. Occurrence, circulation and distribution of subsurface water, its chemical and physical properties, relation to the geologic environment, exploration and development. Lec.-field-lab.

**GLY 4200 MINERALOGY-PETROLOGY I (4)**
PR: Physical Geology, one year of chemistry and college trigonometry or equivalent or CI. Principles of crystal chemistry, crystallography and mineralogy with emphasis on common rock-forming minerals. Lec.-lab.

**GLY 4220 MINERALOGY-PETROLOGY II (5)**
PR: GLY 4200 or CI. Theory and use of polarized light microscopy as a means of mineral identification. Special emphasis is placed on the identification of igneous and metamorphic rocks in hand specimen and thin section. Lec.-lab.

**GLY 4511 PRINCIPLES OF STRATIGRAPHY (4)**
PR: GLY 4550. Emphasis on classical principles of litho- and biostratigraphy, stratigraphic nomenclature, development of stratigraphic philosophy, and paleogeographic reconstruction of sedimentary basins. Emphasis on applications to petroleum exploration. Lec.-lab.

**GLY 4550 DEPOSITIONAL SYSTEMS (3)**
PR: GLY 2016, GLY 2100 or equivalent. Study of modern sedimentary environments and their relationships to one another in order to understand environments preserved in the rock record. Physical, chemical, and biological aspects of terrestrial, transitional and marine sedimentary environments will be examined in light of their eventual preservation in rocks.

**GLY 4555 SEDIMENTOLOGY (4)**
PR: GLY 4220, GLY 4550 or CI. Analysis of sedimentary rocks and sedimentary structures as related to their environments of deposition. Textural and mineralogical study of sediments and statistical applications to sediment analysis. Lec.-lab.-field trips.

**GLY 4700 SURFICIAL GEOLOGY (4)**
PR: Senior or advanced junior standing and CC. Origin, evolution and distribution of land forms and soils. Dynamics of the earth's surface. Lec.-lab.

**GLY 4730 MARINE GEOLOGY (3)**
PR: 12 hours of geology or CI. General survey of the geology of the ocean floor from beaches to ocean trenches including sediments, processes, tectonics and history.

**GLY 4750 FIELD METHODS (3)**
PR: 12 hours of geology courses or CI. Fundamentals of geology in the field; compass and plane table mapping, mapping of aerial photos, reconnaissance surveys, interpretation of geologic structure. Lec.-lab.-field trips.

**GLY 4816 ECONOMIC MINERAL DEPOSITS (3)**
PR: 16 hours of geology or CI. Principles involved in the origin, occurrence, recovery, and use of mineral resources. Lec.-lab.-field trips.

**GLY 4905 INDEPENDENT STUDY (1-3)**
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated. (S/U only.)

**GLY 4915 UNDERGRADUATE RESEARCH (1-3)**
PR: Senior or advanced junior standing and written permission of department prior to registration. Individual experimental investigations with faculty supervision. (S/U only.)

**GLY 4920 GEOLOGY COLLOQUIUM (1)**
PR: Senior standing in Geology. Weekly topical lectures by faculty, graduate students and invited speakers. Required of all senior geology majors, to be repeated for a total of two credit hours. (S/U only.)

**GLY 4930 SELECTED TOPICS IN GEOLOGY (1-4)**
Each topic is a course under the direction of a faculty member with the content depending on the interests of the students and faculty involved. All areas of geology included. Departmental permission required prior to registration.

**OCE 3001 INTRODUCTION TO OCEANOGRAPHY (3)**
Topics in biological, chemical, geological, and physical oceanography presented in lectures by a number of specialists in these fields. (Also listed under Marine Science).

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**GRADUATE COURSES**

**GLY 5241 GENERAL GEOCHEMISTRY (3)**
PR: One year college chemistry, GLY 4200 or CI. Age, formation and evolution of the earth with application of basic chemical concepts and processes that govern the distribution of elements in geologic environments.

**GLY 5245 ANALYTICAL TECHNIQUES IN GEOLOGY (4)**
PR: One year college chemistry, GLY 4220 or CI. Use and application of modern analytical methods including X-ray, atomic absorption, and other geochemical techniques. Interpretation and statistical analysis of data acquired. Lec.-lab.

**GLY 5310 IGNEOUS AND METAMORPHIC PETROLOGY (4)**
PR: GLY 4220. Systematic study of igneous and metamorphic
rocks and complexes, including origin, composition, and classification. Use of the polarizing microscope for thin section analysis will be emphasized, and other modern methods of study will be employed. Lec.-lab.

Gly 5450 Principles of Applied Geophysics (4)
PR: Senior or advanced junior standing, one year of Physics or Cl. Elementary treatment of gravimetric, magnetic, electric, and seismic geophysical techniques as applied to site investigations and minerals deposits. Lec.-lab.-field trips.

Gly 5615 Advanced Stratigraphic Paleontology (3)
PR: GLY 3610, GLY 4550 or Cl. Morphology, geologic distribution, and stratigraphic ranges of important invertebrate guide fossils. Lec.-lab.-field trips.

Gly 5825 Advanced Hydrogeology (4)
PR: GLY 3820, MAC 3282 or MAC 3412, or Cl. Flow systems, analytical and numerical solutions to ground water flow problems. Emphasis on the theoretical aspects of ground water flow systems and their interaction with the geologic framework. Lec.-lab.-field trips.

Gly 5932 Selected Topics in Geology (1-4)
PR: Senior or advanced junior standing and CC. Each topic is a course in directed study under supervision of a faculty member. All areas of geology included. Departmental permission required prior to registration.

Gly 6250 Clay Mineralogy (3)
PR: Graduate standing in geology or Cl. Composition, structures, origin, and diagenesis of clay minerals. Identification of clay minerals by X-ray diffraction techniques.

Gly 6290 Sedimentary Geochimistry (3)
PR: Gly 5241 or Cl. Fundamentals of aqueous geochemistry in relation to chemical and biochemical precipitation of sedimentary materials. Geochemistry of fluids with emphasis on diagenesis.

Gly 6350 Sedimentary Petrography (4)
Classification, petrographic description and interpretation of sedimentary rocks including depositional environments and diagenesis. Lec.-lab.

Gly 6575 Coastal Sedimentation (3)
PR: GLY 4555 or equivalent. Study of modern coastal sedimentary environments with emphasis on beaches, inlets, deltas, estuaries, and marshes. Analysis of sedimentary process and resulting morphology of sediment bodies. Lec.-lab.-field trips.

Gly 6660 Marine Paleoecology (3)
PR: GLY 3610, GLY 4555 or Cl. Interpretation of the relationships between ancient organisms and their environment with emphasis on the substrate. Applications of modern benthic marine environments and sediment-organism relationships to the fossil record. Lec.-field trips.

Gly 6735 Selected Topics in Geology (1-4)
PR: Cl. May be repeated for credit.

Gly 6905 Independent Study (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

Gly 6910 Directed Research (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

Gly 6931 Graduate Seminar (1)
PR: CC. May be repeated for credit. (S/U only.)

Gly 6933 Advanced Topics in Geology (2)
PR: Graduate standing in Geology. Study of current topics in Geology. Required of all graduate students in Geology. May be repeated for credit.

Gly 6971 Thesis; Master's (var.)
Repeatable. (S/U only.)

Marine Science

Graduate Courses

Ocb 5050 Biological Oceanography (3)
PR: Graduate standing or Cl. BSC 2010C, BSC 2011C, BSC 2012. The study of life in the sea with special reference to distribution, reproduction, adaptation, competition, and populations. Lec.-lab. For students who have not majored in a biological science.

Ocb 6671 Methods in Biological Oceanography (1)
PR: Cl. To acquaint students with field and laboratory equipment and techniques currently used in biological oceanography. Emphasis will be on field problems especially those requiring research at sea.

Occ 5050 Chemical Oceanography (3)
PR: CHM 2047 and Cl. The ocean as a chemical system, including composition, physical-chemical aspects, role of nutrients, trace metals, interaction between bottom and overlying water, modern methods of analysis in routine use in oceanography. Lec.-lab.

Occ 6657 Methods in Chemical Oceanography (1)
PR: OCC 5050 or Cl. An intensive study of the use and limitations of field and laboratory equipment which is a standard part of chemical oceanographic research into the behavior of dissolved and particulate constituents in seawater.

Ocf 5085 Marine Ecology (2)
PR: Oce 3001 or Cl. Course explores marine problems and their impact on society. Topics of interest include financing and organization of marine science; regulation (local, state, and Federal) of uses of marine waterways, and the sea; political, social, and legal problems associated with marine pollution and the recovery and development of marine resources; conservation and public decision-making in the marine sphere.

Ocf 5094 Selected Topics in Oceanography (1-3)
PR: Cl. Special topics in biological, chemical, geological, and physical oceanography.

Oce 6908 Independent Study (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

Oce 6934 Selected Topics in Oceanography (1-3)
PR: Cl. Special topics in biological, chemical, geological, and physical oceanography.

Oce 6939 Graduate Seminar in Oceanography (1)
PR: Graduate standing. May be repeated. (S/U only.)

Ocf 6942L Field Studies in Marine Science (var.)
PR: One of the following: Ocb 5050, Ocb 6671, Occ 5050, Occ 6057, Ocg 6075 Ocp 5051, Ocp 6056, or Cl. Combination of classroom study with the collection, analysis, and interpretation of field data to attack specific problems in marine science both for deep sea and nearshore environments.

Oce 6971 Thesis; Master's (var.)
Repeatable. (S/U only.)

Oce 6972 Directed Research (var.)
PR: GR. Master’s level. Repeatable. (S/U only.)

Ocg 5050 Geological Oceanography (3)
PR: Graduate standing of Cl. An introduction to the physical, historical, and structural geology of the ocean basins and their environments. Lec.-lab.

Ocg 6075 Methods in Geological Oceanography (1)
PR: OCG 5050 or Cl. Description and application of the modern techniques of geology and geophysics used to investigate.

Ocp 5051 Physical Oceanography (3)
PR: Graduate standing or Cl, phy 3042. The world ocean including its morphology, physical properties, currents, waves, tides, heat budget, and related topics. Lec.-lab.

Ocp 6056 Methods in Physical Oceanography (1)
PR: Mac 3414, OCC 5050 or OCP 5051, and Cl. Field and laboratory techniques for acquisition, reduction, display, and discussion of physical oceanographic data (e.g., waves, tides, currents, dissolved and suspended constituents).

Undergraduate Courses

Oce 3001 Introduction to Oceanography (3)
Topics in biological, chemical, geological, and physical oceanography presented in lectures by a number of specialists in these fields. (Also listed under Geology.)
MAC 2244
DYNAMICS OF MARINE BENTHIC COMMUNITIES (3)
PR: EGN 2210, ZOO 5555C, or CI. Theoretical approach to the study of benthic communities in fluctuating and constant environments. Methods of analysis of benthic data will be evaluated and discussed. Computer programs will be utilized for analysis wherever possible. Lec.-lab.

ZOO 5456C
ICHTHYOLOGY (4)
PR: CI or senior or graduate status; BSC 2010C, BSC 2012, PCB 4674 (helpful), ZOO 3713C (helpful). The evolution, systematics, and ecology of fishes. (Also listed under Zoology.)

MATHEMATICS
UNDERGRADUATE COURSES
COP 3215
COMPUTER APPLICATIONS OF MATHEMATICS (3)
CR: MAC 3412 or CC. Computer applications to mathematics, especially calculus, with FORTRAN programming.

MAC 4211
ADVANCED CALCULUS I (4)
PR: MAC 3413, with a grade of "C" or better; MHF 3102 and MAS 3103 or CI. Concepts of limit, continuity, differentiation, and integration of functions in one and several variables. Major topics include partial differentiation, Riemann-Stieltjes integrals, improper integrals, infinite series, uniform convergence, implicit-function theorems, line and surface integrals, vector analysis.

MAC 4212
ADVANCED CALCULUS II (4)
PR: MAC 4211. Continuation of MAC 4211.

MAC 1104
COLLEGE ALGEBRA AND TRIGONOMETRY (PR: Two years of secondary school mathematics including one year of algebra or HCC mathematics course MAT 1033, taught on USF campus or CC. Real numbers and their properties, algebraic expressions, equations and inequalities, functions, polynomials, exponential and logarithmic functions. Angles, trigonometric functions, properties and graphs of trigonometric functions, right triangles, laws of sines and cosines, polar coordinates.

MAC 1114
COLLEGE TRIGONOMETRY (2)
Angles, Trigonometric functions, properties and graphs of trigonometric functions, right triangles, laws of sines and cosines, polar coordinates.

MAC 2243
ELEMENTARY CALCULUS I (4)
PR: Two years of secondary school mathematics including one year of algebra or HCC mathematics course MAT 1033 taught on USF campus or CC. Algebra, functions, differentiation, applications. MAC 2243-MAC 2244 is primarily for students from Biological Sciences, Social Sciences and Business. (No credit for math majors or students with credit in MAC 3281 or MAC 3411).

MAC 2244
ELEMENTARY CALCULUS II (4)
PR: MAC 2243. Antiderivatives, the definite integral, techniques of integration, logarithmic and exponential functions, applications. (No credit for Mathematics majors or students with credit in MAC 3282 or MAC 3412.)

MAC 3281
ENGINEERING CALCULUS I (3)
PR: Pass diagnostic tests in algebra and trigonometry. Differentiation, limits, differentials, extrema, indefinite integral. (No credit for students with credit in MAC 2243 or MAC 3411.)

MAC 3282
ENGINEERING CALCULUS II (3)
PR: MAC 3281. Definite integral, trigonometric functions, log, exponential, applications. (No credit for students with credit in MAC 2244 or MAC 3412.)

MAC 3283
ENGINEERING CALCULUS III (3)
PR: MAC 3282. Techniques of integration, numerical methods, analytic geometry, polar coordinates, vector algebra, applications. (No credit for students with credit in MAC 3413.)

MAC 3411
CALCULUS I (4)
PR: MAC 1104, MAC 1114 with a grade of "C" or better or CC. Limits, derivatives, applications. (No credit for students with credit in MAC 2243 or MAC 3281.)
Students who successfully complete this course may not also receive credit for either ECO 4402 and GEB 3212 or STA 3212. (No credit for Mathematics majors.)

STA 3024 INTRODUCTORY STATISTICS II (3)
PR: STA 3023 or CC. Factorials, ANCOV; multiple curvilinear regression; response surfaces; Latin square, Split Plots, incomplete blocks designs; distribution free methods.

STA 3404 ELEMENTARY PROBABILITY (3)
Counting techniques, probability, expectation, probability distributions, the law of large numbers. (No credit for Mathematics majors. Credit for Department of Biology majors.)

STA 4321 INTRODUCTION TO STATISTICS (3)

STA 4442 INTRODUCTION TO PROBABILITY (3)
PR: MAC 3413. MHG 3102. Introduction to probability theory using calculus. Basic ideas of probability and random variables, discrete probability functions, continuous probability densities including normal, gamma, $x^2$, and Weibull, and transformations of random variables.

GRADUATE COURSES

MAA 5306 REAL ANALYSIS I (3)

MAA 5307 REAL ANALYSIS II (3)
PR: MAA 5306. Continuation of MAA 5306.

MAA 5402 COMPLEX ANALYSIS I (3)
PR: MAA 4211. Complex numbers, analytic functions and mappings, integrals.

MAA 5403 COMPLEX ANALYSIS II (3)
PR: MAA 5402. Power series, residues and poles, conformal mappings.

MAA 5405 APPLIED COMPLEX ANALYSIS (3)
Complex numbers, analytic and harmonic functions. Series. Contour integrals, residue theory. Conformal mappings. (A survey course emphasizing techniques and applications.) (No credit for students with credit in MAA 5402 and MAA 5403.)

MAA 6406 COMPLEX ANALYSIS I (3)

MAA 6407 COMPLEX ANALYSIS II (3)
PR: MAA 6406. Continuation of MAA 6406.

MAD 6516 INTRODUCTION TO FUNCTIONAL ANALYSIS I (3)

MAD 6517 INTRODUCTION TO FUNCTIONAL ANALYSIS II (3)
PR: MAA 6516. Continuation of MAA 6516.

MAD 6616 MEASURE AND INTEGRATION I (3)

MAD 6617 MEASURE AND INTEGRATION II (3)
PR: MAA 6616. Continuation of MAA 6616.

MAD 5305 INTRODUCTION TO GRAPH THEORY (3)
PR: CC. Brief introduction to classical graph theory (4-color theorem, etc.), directed graphs, connected digraphs, condensations, incidence matrices, Polya’s Theorem, networks.

MAD 6407 ANALYSIS OF NUMERICAL METHODS (4)

MAD 6510 ANALYSIS OF ALGORITHMS (4)
PR: MAD 4401 or MAD 6407. Mathematical theory associated with algorithms for computer information processing; expected time and space requirements of algorithms, comparison of algorithms, construction of optimal algorithms, theory, underlying particular algorithms.

MAD 6616 ALGEBRAIC AUTOMATA THEORY (3)
PR: MAS 5312 or CC. Algebraic automata theory.

MAD 6617 ALGEBRAIC CODING THEORY (3)
PR: MAD 6616 or CC. Algebraic coding theory.

MAE 5874 ABSTRACT ALGEBRA FOR TEACHERS (2)
PR: MAS 3103 and MAS 4301 and bachelor’s degree or CC. Groups, fields, vector spaces as they relate to high school algebra and geometry. (No credit for Mathematics majors.)

MAE 5876 MATHEMATICAL ANALYSIS FOR TEACHERS (4)
PR: MAC 3413 and bachelor’s degree or CC. Advanced consideration of limits, continuity, derivatives, differentials. (No credit for Mathematics majors.)

MAP 5205 MATHEMATICAL OPTIMIZATION THEORY I (3)

MAP 5316 INTERMEDIATE DIFFERENTIAL EQUATION I (3)

MAP 5317 INTERMEDIATE DIFFERENTIAL EQUATION II (3)
PR: MAP 5316. Topics selected from oscillation and comparison theorems, stability and asymptotic behavior, perturbation theory, nonlinear theory, special functions.

MAP 5345 APPLIED PARTIAL DIFFERENTIAL EQUATIONS (3)
PR: MAP 4302 and CC. Separation of variables, the heat equation, wave equation, Laplace’s equation, classification, Green’s functions, with emphasis on applications.

MAP 5407 METHODS OF APPLIED MATHEMATICS (3)

MAP 6206 MATHEMATICAL OPTIMIZATION THEORY II (3)

MAP 6336 THEORY OF ORDINARY DIFFERENTIAL EQUATIONS (4)
PR: MAP 5316 or MAP 5407 or CC. Advanced topics selected from: existence and uniqueness theory, singularity theory, asymptotics and stability, eigenfunctions, perturbations, topological methods.

MAP 6356 PARTIAL DIFFERENTIAL EQUATIONS (4)
PR: MAP 5345 or CC. Classification of second order equations. Cauchy problems, Dirichlet and Neumann problems, mixed problems, properties of solutions.

MAP 6375 NUMERICAL TECHNIQUES FOR PARTIAL DIFFERENTIAL EQUATIONS (3)

MAS 5146 ADVANCED LINEAR ALGEBRA (3)
PR: MAS 3103, MHF 3102 or CC. Vector spaces, linear independence, dimensions, matrices, linear transformations.

MAS 5215 NUMBER THEORY (3)
PR: CC. Congruences, quadratic residues, selected topics.

MAS 5311 ALGEBRA I (3)
PR: MAC 3413, MAS 5146, MHF 3102. An introduction to group theory.

MAS 5312 ALGEBRA II (3)
PR: MAS 5311. An introduction to Galois theory.

MAT 5932 SELECTED TOPICS (1-4)
PR: Senior or junior standing and CC. Each topic is a course of study. 01-History of Mathematics, 03-Logic and Foundations, 05-Number Theory, 07-Topics in Algebra, 09-Mathematics for

MAT 6908 INDEPENDENT STUDY (var.)
Indepedent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

MAT 6911 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

MAT 6915 GRADUATE RESEARCH METHODS (1-4)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

MAT 6932 SELECTED TOPICS (1-4)
PR: CC. 01-Topology, 02-Analysis, 03-Algebra, 04-Applied Mathematics, 05-Graph Theory, 06-Number Theory, 07-Mathematics for Physics, 08-Probability, 09-Statistics, 10-Complex Analysis.

MAT 6939 GRADUATE SEMINAR (1-4)
Direction of this seminar is by a faculty member. Students are required to present research papers from the literature. (S/U only.)

MAT 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

MAT 7912 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

MAT 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

Mhf 5302 ELEMENTARY MATHEMATICAL LOGIC (3)
PR: CC. Truth tables, tautologies, quantifiers, rules of inference, informal proofs in mathematics.

Mhf 6306 LOGIC AND FOUNDATIONS (4)
PR: CC. Propositional calculus, Post's theorem, first order and equality calculus, models, completeness and consistency theorems. Gödel's theorems, recursive functions.

MTG 5316 TOPOLOGY I (3)

MEG 5317 TOPOLOGY II (3)
PR: MTG 5316. Continuation of MTG 5316.

MTG 6326 ADVANCED TOPOLOGY (3)
PR: MTG 5317 and CC. Function spaces, compactifications, covering spaces, other topics.

STA 5166 APPLIED STATISTICAL METHODS I (3)
PR: STA 4442 and CC. Statistical inference in physical and engineering sciences utilizing sample probability distributions, point and interval estimation and test of significance. 3 lecture periods and 1 lab period.

STA 5167 APPLIED STATISTICAL METHODS II (3)
PR: STA 5166. Applications of analysis of variance and covariance, regression analysis use of $x^2$ for contingency tables and goodness of fit procedures. 3 lecture periods and 1 lab period.

STA 5206 STOCHASTIC PROCESS (4)
PR: STA 5447. Basic concepts of stochastic processes, finite Markov chains, random walks with applications to life sciences and engineering.

STA 5326 MATHEMATICAL STATISTICS (4)
PR: STA 5447. Sample distribution theory, point & interval estimation theory, and theory of hypothesis testing.

STA 5446 PROBABILITY THEORY I (3)
PR: MAA 4212 or MAA 5306. Concepts of probability theory, axioms of probability, random variables, probability distributions and distributions of functions of stochastic variables.

STA 5447 PROBABILITY THEORY II (3)

STA 5526 NON-PARAMETRIC STATISTICS (4)
PR: STA 5326, CC. Theory and methods of non-parametric statistics, order statistics, tolerance region and their applications.

STA 6208 LINEAR STATISTICAL MODELS (3)
PR: STA 5167 or STA 5326. Distribution theory for linear statistical models. Results applied to multiple regression, polynomial regression, balanced and unbalanced experimental designs, analysis of covariance.

STA 6746 MULTIVARIATE STATISTICAL ANALYSIS (3)
PR: STA 6876. The multivariate normal, estimation of mean vector and covariance matrix, correlation analysis, generalized $x^2$-statistics and testing of the general linear hypothesis.

STA 6876 TIME SERIES ANALYSIS (4)
PR: STA 4526. Basic concepts of the theory and applications of time series analysis to include filtering, forecasting modeling, spectral analysis of univariate realizations with applications.

MEDICAL TECHNOLOGY

UNDERGRADUATE COURSES

MLO 3031 INTRODUCTION TO MEDICAL TECHNOLOGY (1)
PR: Senior standing and acceptance into an approved affiliated hospital. An introduction to the principles and practices of medical technology and their relationship to patient care. A hospital internship course for medical technology majors.

MLO 4215 CLINICAL MICROSCOPY I (2)
PR: Senior standing and acceptance into an approved affiliated hospital. Lecture and laboratory instruction such as urinalysis, parasitology, and histological technique. A hospital internship course for medical technology majors.

MLO 4216 CLINICAL MICROSCOPY II (4)
PR: Senior standing and acceptance into an approved affiliated hospital. A continuation of MLO 4215. A hospital internship course for medical technology majors.

MLO 4309 HEMATOLOGY (6)
PR: Senior standing and acceptance into an approved affiliated hospital. Lecture and laboratory instruction in the methods of study of hematological disorders. A hospital internship course for medical technology majors.

MLO 4405 CLINICAL BACTERIOLOGY (6)
PR: Senior standing and acceptance into an approved affiliated hospital. Instruction in lecture and laboratory on the various aspects of morphology, physiology, and classification of bacteria, especially those related to disease. A hospital internship course for medical technology majors.

MLO 4545 CLINICAL CHEMISTRY II (4)
PR: Senior standing and acceptance into an approved affiliated hospital. A continuation of MLO 4625C, including procedures required for serology, transfusions, blood preservation, and antibody studies. A hospital internship course for medical technology majors.

MLO 4605C CLINICAL LABORATORY INSTRUMENTAL ANALYTICAL TECHNIQUES (1)
PR: Senior standing and acceptance into an approved affiliated hospital. Instruction in the techniques and procedures for use in clinical chemical analyses. A hospital internship course for medical technology majors.

MLO 4625C CLINICAL CHEMISTRY I (6)
PR: Senior standing and acceptance into an approved affiliated hospital. Instruction in the use of special laboratory instruments such as automated instruments, use of radioisotopes, and techniques of measuring basal metabolism. A hospital internship course for medical technology majors.

PHYSICS

UNDERGRADUATE COURSES

PHS 3101 MATHEMATICAL ANALYSIS OF PROBLEMS IN MECHANICS AND ELECTRICITY (2)
PR: One year of non-calculus general physics. CR: MAC 3283 or MAC 3413. Designed for students who have not had the general physics sequence using calculus. Review of mechanics and electricity emphasizing problems which involve the use of calculus. Sem. I, II.

PHS 3102 PROBLEMS IN GENERAL PHYSICS I (1)
CR: PHY 2050 and PHY 3040. First semester of two semester sequence of general physics problems. A course designed to allow
those interested students to investigate problems not covered in the general physics course. Lec. Sem. I, II, S.

PHS 3103 PROBLEMS IN GENERAL PHYSICS II (1)
CR: PHY 2051 and PHY 3041. Second semester of sequence
PHS 3102, PHS 3103. Sem. I, II, S.

PHS 3002 ACoustics for communicOlogy (3)
Non-mathematical study of general wave motion and associated phenomena. Acoustic resonance and response of the ear. Introduction to harmonic analysis of complex wave-forms with application to testing with pure tones and various types of waves. Acoustic instrumentation. (No credits for science majors.) Sem. I, II.

PHS 4814 FUNDAMENTAL ACOUSTICS (3)

PHY 2038 ENERGY AND HUMANITY (3)
This course, which is primarily qualitative and discussion oriented, and designed for students of all disciplines and backgrounds, looks at the social, economic, and political aspects of the U.S. and world energy situations. This down-to-earth course, which tells it like it is, seeks to get students involved, teach them how to conserve energy for profit, and show them how they can personally use solar energy as a complementary energy source for both residential and commercial purposes. Field trips, movies, and current energy-related news articles play important roles in this course. (For non-majors) Sem. I, II, S.

PHY 2050, 2050L GENERAL PHYSICS AND LABORATORY (3:1)
First semester of a two semester sequence of general physics (mechanics, heat, electricity, wave motion, optics, atomic and nuclear physics) and laboratory for science students. Must be taken concurrently and, if dropped, then dropped simultaneously. Sem. I, II, S.

PHY 2051, 2051L GENERAL PHYSICS AND LABORATORY (3:1)
PR: PHY 2050, PHY 2050L. Second semester of general physics and lab for science students. Must be taken concurrently and, if dropped, then dropped simultaneously. Sem. I, II, S.

PHY 3020 CONTEMPORARY PHYSICS (4)
PR: Junior standing. A qualitative, non-mathematical investigation of physics, emphasizing its influence on life today. (No credit for physics or mathematics majors) Sem. I, II, S.

PHY 3040, 3040L GENERAL PHYSICS AND LABORATORY (3:1)
PR: MAC 3281 or MAC 3411. First semester of a two semester sequence of general physics (mechanics, wave motion, sound, thermodynamics, geometrical and physical optics, electricity, and magnetism) and laboratory for physics majors and engineering students. Must be taken concurrently and, if dropped, then dropped simultaneously. Sem. I, II, S.

PHY 3041, 3041L GENERAL PHYSICS AND LABORATORY (3:1)
PR: MAC 3282 or MAC 3412, PHY 3040, PHY 3040L. Second semester of general physics and laboratory for physics majors and engineering students. Must be taken concurrently and, if dropped, then dropped simultaneously. Sem. I, II, S.

PHY 3123 MODERN PHYSICS (3)

PHY 3223 MECHANICS I (3)

PHY 3323C ELECTRICITY AND MAGNETISM I (4)
PR: PHY 3041 or MAC 3283 or MAC 3413. Electromagnetic circuits; resistance, capacitance, inductance, direct and alternating current circuits, thermodynamics, and instrumentation. Laboratory. First semester of sequence PHY 3323C, PHY 4324. Sem. II.

PHY 3424 OPTICS (4)
PR: PHS 3101 or PHY 3041; CR: MAC 3283 or MAC 3413. Reflection, refraction, dispersion, interference, diffraction, polarization, and laboratory. Sem. I.

PHY 3822I INTERMEDIATE LABORATORY (2)
CR: PHY 2051 or PHY 3041 or equivalent. Experiments in modern physics, including the area of atomic, nuclear, solid state and wave phenomena. Sem. I.

PHY 4224 MECHANICS II (3)
PR: PHY 3223; CR: MAP 4302. Continuation of PHY 3223. Motion of a group of particles, coupled oscillators, normal modes, dynamics of rigid bodies. Lagrange's and Hamilton's equations, principle of least action. Sem. II.

PHY 4324 ELECTRICITY AND MAGNETISM II (3)

PHY 4404 HOLOGRAPHY FOR FILM MEDIA (3)
PR: Junior standing in any major or CC. Practical instruction and laboratory experience in the making of holograms. Qualitative theory of lasers and holography. (For non-majors) Sem. II.

PHY 4526 STATISTICAL PHYSICS (3)

PHY 4604 QUANTUM MECHANICS I (3)
PR: PHY 3123 or Cl. Wave-particle duality, uncertainty principle. Schrodinger's equation, postulates, angular momentum, and central forces. First semester of sequence PHY 4604, PHY 5624. Sem. I.

PHY 4744C ELECTRONICS FOR RESEARCH (3)
PR: General Physics or Cl. Direct and alternating current circuits, transients, rectification, amplification; feedback, pulse circuits, and integrated circuits, laboratory. (No credit for physics or mathematics majors.) Sem. I, II.

PHY 4823I ADVANCED LABORATORY (2)
PR: PHY 3822L. Experimental work primarily related to nuclear physics. Emphasis on modern physical experimental techniques employing some of the new types of equipment. Sem. II.

PHY 4905 INDEPENDENT STUDY (1-3)
PR: Cl. Specialized, independent study determined by the student's need and interest. The written contract required by the College of Natural Sciences specifies the regulations governing independent study. May be repeated. (S/U only.)

PHY 4910 UNDERGRADUATE RESEARCH (1-4)
PR: Senior or advanced junior standing and CC. An individual investigation in the laboratory or library or both, under the supervision of the instructor. Credit hours and other contractual terms, are to be determined by student/instructor agreement. (S/U only.) Sem. I, II, S.

PHY 4930 PHYSICS SEMINAR (1)
PR: Senior or advanced junior standing or CC. All undergraduates require enrollment in this course at least twice and are expected to attend all Physics Colloquia. (S/U only.) Sem. I, II, S.

PHY 4936 SELECTED TOPICS IN PHYSICS (1-4)
PR: Senior or advanced junior standing and CC. Each topic is a course in directed study and under the supervision of a faculty member.

GRADUATE COURSES

PHS 5113 METHODS OF THEORETICAL PHYSICS I (3)
PR: MAP 4302 or Cl. Applications of mathematical techniques to classical and modern physics. Vector spaces including Hilbert space and Dirac notation, elements of vector and tensor analysis, matrices, group representations, eigenvalue problems, and variational methods. Sem. I.

PHS 5114 METHODS OF THEORETICAL PHYSICS II (3)
PR: MAP 4302 or Cl. Applications of mathematical techniques to classical and modern physics. Elements of complex analysis including conformal mapping and calculus of residues, Fourier analysis, and transform calculus. Sem. II.
COLLEGE OF NATURAL SCIENCES

PHS 5304  NUCLEAR PHYSICS (3)
PR: PHY 4604 or CI. Nuclear forces, nuclear models, nuclear structure, decay, nuclear reactions, and high energy physics. Sem. II.

PHS 5405  SOLID STATE PHYSICS I (3)
PR: PHY 3123, MAP 4302. Crystal structure, x-ray and electron diffraction, mechanical and thermal properties of solids, electrical and magnetic properties of metals, band theory of metals, insulators, and semiconductors. First semester of sequence PHS 5405, PHS 6426. Sem. II.

PHS 5505  PLASMA PHYSICS I (3)
PR: PHY 4324 or CI. Introduction to Boltzmann, magnetohydrodynamic and orbit approaches to plasmas. Longitudinal and electromagnetic waves in plasmas. Collisions and ionization. Instabilities. Sem. I.

PHS 6136  PHYSICAL APPLICATIONS OF GROUP THEORY (3)
PR: PHS 5114 or CI. Introduction to the theory of Lie Groups and Lie Algebras; applications to atomic and molecular physics, solid state physics, nuclear physics, classical physics, and elementary particle physics. (Offered alternate years.)

PHS 6204  ATOMIC AND MOLECULAR SPECTRA (3)
PR: PHY 4604 or CI. Quantitative study of atomic and molecular structure and spectra. Sem. II.

PHS 6426  SOLID STATE PHYSICS II (3)
PR: PHS 5405 or CI. Optical, electric, and magnetic properties of insulators, superconductivity, imperfections in solids. Second semester of sequence PHS 5405, PHS 6426. Sem. I.

PHS 6525  PLASMA PHYSICS II (3)
PR: PHS 5505 or CI. An analytical study of the various types of wave phenomena in plasmas describable by the continuum equations, the Boltzmann-Vlasov equation or the Boltzmann equation. Sem. II.

PHS 6607  THEORY OF RELATIVITY (3)
PR: PHS 5113 or CI. The special and general theory of relativity, including the gravitational field equations, applications of the special theory, experimental tests of the general theory and various topics of current research interest. (Offered alternate years.)

PHY 5624  QUANTUM MECHANICS II (4)
PR: PHY 4604 or CI. Matrix mechanics, approximation methods, transformations, scattering and identical particles. Sem. II.

PHY 5722C  ELECTRONICS (4)
PR: PHY 3822L and PHY 4324. Vacuum and gas-discharge tubes, semiconductors, transistors, electronic circuit analysis, and laboratory. Sem. II.

PHY 5937  SELECTED TOPICS IN PHYSICS (1-4)
PR: Senior or advanced standing and CC. Each topic is a course in directed study under the supervision of a faculty member.

PHY 6246  CLASSICAL MECHANICS (4)
PR: PHS 5113 or CI. Dynamics of particles and systems of particles, Lagrange's equation, central forces, rigid body dynamics. Sem. I.

PHY 6346  ELECTROMAGNETIC THEORY I (3)

PHY 6347  ELECTROMAGNETIC THEORY II (3)
PR: PHY 6346 or CI. Electromagnetic waves, wave guides and resonant cavities, diffraction, relativistic-particle kinematics and dynamics, plasmas and magnetohydrodynamics. Sem. II.

PHY 6536  STATISTICAL MECHANICS (3)
PR: PHY 4626 or CI. Kinetic theory, configuration and phase space. Boltzmann theorem, Liouville theorem, ensemble theory, quantum statistics. Sem. II.

PHY 6846L  EXPERIMENTAL PHYSICS (2)
PR: Graduate standing. Laboratory techniques frequently required in experimental research. Includes manipulation of glass, production and measurement of vacua, production and measurement of thin films, and use of various machine tools. Sem. I.

PHY 6909  INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

PHY 6911  DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

PHY 6935  GRADUATE SEMINAR (1)
All physics graduate students are expected to enroll in this course Sem. I each year: (S/U only.) Sem. I, II, S.

PHY 6938  SELECTED TOPICS IN PHYSICS (1-10)
PR: CC. Each topic is a course in directed study under the supervision of a faculty member.

PHY 6940  GRADUATE INSTRUCTION METHODS (1-3)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of three credits per student. (S/U only.)

PHY 6971  THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

NURSING

NURSING UNDERGRADUATE COURSES

HUN 3201  NUTRITION (3)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. The study of normal and therapeutic nutrition for all age groups from infancy through senescence. Considers the effects of cultural, religious, and socioeconomic factors in defining and modifying food patterns of individuals and groups.

NUR 3130  NURSING PROCESS II (2)
PR: Permission of faculty. Development of the nursing process as it relates to normal and high risk childbearing families, maturing families with children, and families with complex health problems. Integrates pathology, nutrition, pharmacology, and essential psychomotor skills of all ages.

NUR 3130L  NURSING INTERVENTION II (3)
PR: Permission of faculty. Clinical nursing practice linked with Nursing Process II and focuses on maturing families and their health needs. Incorporates psychomotor skills, nutrition, pharmacology, psychosocial and community aspects.

NUR 3321  NURSING PROCESS III (2)
PR: Permission of faculty. Development of nursing process as it relates to mental health-psychiatric nursing needs of clients. Integrates pathology, nutrition, pharmacology and essential psychomotor skills of all ages.

NUR 3321L  NURSING INTERVENTION III (3)
PR: Permission of faculty. Clinical nursing practice course linked to Nursing Process III. Focuses on meeting the mental health-psychiatric nursing needs of clients of all ages. Includes pathology, nutrition, pharmacology, essential psychomotor skills and community aspects.

NUR 3612  NURSING PROCESS I (3)
PR: Permission of faculty. Introduction to the nursing process and its application with stable families in the childbearing and child-rearing years. Essential psychomotor skills will be included.

NUR 3612L  NURSING INTERVENTION I (2)
PR: Permission of faculty. Clinical nursing practice focused on healthy families in a variety of settings (linked to Nursing Process I). Incorporates psychomotor skills, nutrition, pharmacology, psychosocial and community aspects.

NUR 3722C  CLIENT ASSESSMENT I (3)
PR: Admission to nursing major or permission of faculty. Introduces knowledge and skills essential for biopsychosocial assessment of individual clients in primary, secondary and tertiary care settings with emphasis on history-taking and physical assessment. Includes practice of physical assessment skills.

NUR 3723C  CLIENT ASSESSMENT II (3)
PR: Permission of faculty. Expands knowledge and skills essential for biopsychosocial assessment of needs of clients and
families in primary, secondary, or tertiary care settings with emphasis on data collection from secondary sources and interpretation of data with respect to clients' nursing needs.

NUR 4636 NURSING PROCESS IV
(3) Permission of faculty. Focuses on the care of institutionalized patients with selected major health problems (interferences in cell growth and vascular functions), fluid and electrolyte balance, the surgical cycle, chronic illness and death. Family-community health component focuses on care of aged and chronically ill. Includes pathophysiology, nutrition, psychosocial aspects, pharmacology and appropriate psychomotor skills.

NUR 4636L. NURSING INTERVENTION IV
(4) PR: Permission of faculty. Clinical nursing practice in community and secondary care settings (linked to Nursing Process IV). Includes essential psychomotor skills, pharmacology, nutrition, and psychosocial health aspects.

NUR 4651 NURSING PROCESS V
(2) PR: Permission of faculty. Development of the nursing process for clients of all ages (including mother and infants) with problems arising from electrolyte, metabolic, endocrine and genitourinary disturbances. Integrates pathophysiology, essential psychomotor skills, nutrition, pharmacology, psychosocial and community health aspects.

NUR 4651L. NURSING INTERVENTION V
(2) PR: Permission of faculty. Clinical nursing practice in secondary and/or tertiary care settings (linked to Nursing Process V) with clients of all ages with problems arising from electrolyte, metabolic, endocrine and genitourinary disturbances. Includes pathophysiology, nutrition, pharmacology, essential psychomotor skills, psychosocial and community health aspects.

NUR 4652 NURSING PROCESS VI
(2) PR: Permission of faculty. Development of the nursing process for clients of all ages with problems arising from disturbances in oxygenation. Integrates pathophysiology, nutrition, pharmacology, psychosocial, essential psychomotor skills and community health aspects.

NUR 4652L. NURSING INTERVENTION VI
(2) PR: Permission of faculty. Clinical nursing practice in secondary and/or tertiary care settings (linked to Nursing Process VI) with clients of all ages with problems arising from disturbances in oxygenation. Includes essential psychomotor skills, pathophysiology, nutrition, pharmacology, psychosocial and community health aspects.

NUR 4653 NURSING PROCESS VII
(2) PR: Permission of faculty. Development of the nursing process for clients of all ages with problems arising from disturbances in coordination, perception, or sensory function. Integrates pathophysiology, nutrition, essential psychomotor skills, pharmacology, psychosocial and community aspects.

NUR 4653L. NURSING INTERVENTION VII
(2) PR: Permission of faculty. Clinical nursing practice in secondary or tertiary care settings (linked to Nursing Process VII) with clients in all age groups with disturbances in coordination, perception or sensory function. Integrates pathophysiology, essential psychomotor skills, nutrition, pharmacology, psychosocial and community aspects.

NUR 4910C INDEPENDENT STUDY
(1-5) PR: Open to majors and non-majors with faculty permission. Individual or group investigation of special problems relevant to the health of individual or groups. Direct service to individuals or groups may be involved. Project requirements (e.g., oral and written reports, conferences, etc.) will be determined on an individual basis by faculty permiters. May be repeated up to a total of five quarter credit hours.

NUR 4930 SELECTED TOPIC IN NURSING
(2-8) PR: Junior or senior standing or permission of faculty. Content will depend upon student demand and faculty interest and may focus on any area relevant to nursing practice. May involve class, seminar, and/or clinical laboratory and may be repeated for different topics. (S/U only.)

*NUR 4943C NURSING PRACTICUM III
(5) PR: All preceding courses in prescribed curriculum plan or permission of Dean. Individually planned experience in a clinical and/or functional area of professional nursing which is related to student's professional goals. Associated seminars and/or institutes. (S/U only.)

NUR 4943L PRECEPTORSHIP
(6) PR: Permission of faculty. Concentrated clinical nursing practice (preceptorship) under faculty guidance. The nature and goals of the experience will be determined collaboratively by students, faculty and personnel from cooperating agencies where students elect experience.

NUS 3210C HUMAN ANATOMY
(3) PR: Admission to nursing major or permission of Dean. A course in basic human anatomy including cellular and organ system relationships as a foundation for normal and abnormal function. Lec-lab.

NUS 3211C HUMAN PHYSIOLOGY
(4) PR: Admission to nursing major or permission of Dean. Basic functional features of the normal human body considered on a systematic basis. General content includes the cell and functional organization of the body, the function of the body systems, and limited attention to deviations from normal and application to nursing practice. Lec-lab.

*NUS 3220 BIOPSYCHOSOCIAL PATHOLOGY
(3) PR: Admission to nursing major or permission of Dean. Interferences in biopsychosocial organization and function and the ways in which disruptions manifest themselves in signs, symptoms, physical, and laboratory findings.

*NUS 3229L NURSING PRACTICUM I
(3) PR: All preceding courses in prescribed curriculum plan or permission of Dean. Clinical practice providing experience in application of the nursing process with selected multi-problem clients in selected distributive and/or episodic care settings. (S/U only.)

*NUS 3241C PLANNING, IMPLEMENTING, AND EVALUATING NURSING INTERVENTION
(3) PR: All preceding courses in prescribed curriculum plan or permission of Dean. Focuses on using assessment skills as basis for planning, implementing, and evaluating nursing intervention for multi-problem clients in both distributive and episodic settings.

NUS 3560 NURSING CORE I
(4) PR: Admission to nursing major or permission of faculty. The first of a series of courses that focus on progressive development of professional nursing roles and responsibilities and its relationship to the role of other health care and related professionals. Includes examination of theories relevant to professional nursing practice, (communication, systems, leadership, scientific methodology, role learning, change, stress), historical development of nursing, and trends in nursing and health care, and ethical-legal aspects of health care.

NUS 3561 NURSING CORE II
(2) PR: Permission of faculty. Continuation of Nursing Core I.

NUS 3562 NURSING CORE III
(2) PR: Permission of faculty. Continuation of previous core courses.

*NUS 4300 NURSING INQUIRY I
(2) PR: All preceding courses in prescribed curriculum plan or permission of Dean. This course will emphasize the relationship between research and the improvement of nursing practice and health care: attention will be directed toward the need for research in nursing, areas currently being investigated, ethical issues, the research process, and the implementation of the results of nursing research.

*NUS 4422 NURSING PROCESS SYNTHESIS
(4) PR: All preceding courses in prescribed curriculum plan or permission of Dean. Continuation of NUS 3241C and NUS 3242L, with emphasis on the leadership, teaching, and management responsibilities in pprofessional nursing practice.

*NUS 4422L. NURSING PRACTICUM II
(4) PR: All preceding courses in prescribed curriculum plan or permission of Dean. Application of theories developed in NUS 4422 to nursing practice in selected settings. Contract learning experiences of individual students. (S/U only.)

*Courses available only to students currently enrolled.
NUR 4505 NURSING CORE IV (2)
PR: Permission of faculty. Continuation of previous core courses with emphasis on issues and trends related to nursing roles in the health care delivery system and on nursing research.

NUR 4506 NURSING CORE V (3)
PR: Permission of faculty. Continuation of previous core courses with continued research emphasis related to problems of transition from student to practitioner including reality shock, use of supervision, self-evaluation, professional development and setting career goals.

GRADUATE COURSES
NUR 6270C COMMON HEALTH PROBLEMS I (3)
PR: Advanced Physiology. Adult Health Assessment, Foundations of Nursing Theory. Didactic content focuses on the health--illness continuum of adults including diagnosis and management of acute and chronic illness. Clinical experience is scheduled in secondary and tertiary health care settings.

NUR 6271C COMMON HEALTH PROBLEMS II (3)
A continuation of Common Health Problems I.

NUR 6272 MANAGEMENT OF COMMON HEALTH PROBLEMS (2)
PR: Adv. Physiology, Adult Health Assessment, Foundations of Nursing Theory, Common Health Problems I and II. Didactic content taught by multidisciplinary faculty which focuses on the diagnosis and management of acute and chronic illnesses.

NUR 6515C ISSUES IN GERONTOLOGY (2)
PR: Admission to program or permission of faculty. An intense, integrated, multidisciplinary focus in which specialists will present current developments in gerontology in the fields of biology, psychology, medicine, nutrition, economics, adult education, sociology and nursing.

NUR 6516C PHYSIOLOGICAL AND PSYCHOLOGICAL ASPECTS OF GERONTOLOGICAL NURSING (2)
PR: Admission to program or permission of faculty. An intense, study of the physiological and psychological changes in gerontological patients and implications for nursing practice.

NUR 6720 ADVANCED PHYSIOLOGIC ASSESSMENT (4)
PR: Admission to program or permission of faculty. Focus on cellular physiology and the feedback and control mechanism of bodily functions at the cellular, organ and system level.

NUR 6721 ADVANCED PATHOPHYSIOLOGY (2)
PR: Advanced physiology. A conceptual approach within a systems framework which focuses on disease mechanisms to establish a sound scientific base for students' clinical assessment and management of common health problems of adult patients.

NUR 6751C ADULT HEALTH ASSESSMENT (3)
PR: Admission to program or permission of faculty. Advanced Physiology prerequisite or concurrent. Emphasizes advanced physical and psychological clinical assessment skills and includes a theoretical and practical approach based on nursing process.

NUR 6905 INDEPENDENT STUDY (1-6)
Specialized individualized study determined by students' needs and interests which requires an approved contract with a faculty member.

NUR 6931 SELECTED TOPICS (1-4)
Seminars for the analysis and discussion of selected issues in nursing of topical concern to students and faculty.

NUR 6945L PRACTICUM IN CLINICAL NURSING I (4)
PR: Common Health Problems I and II. Intensive directed study in advanced professional nursing which focuses on testing of nursing theories, teaching strategies and management of selected patients.

NUR 6946L PRACTICUM IN CLINICAL NURSING II (4)
PR: Practicum in Clinical Nursing I. A summative clinical experience which focuses on the role of the advanced nurse clinician as a clinical specialist or adult nurse practitioner.

NUR 6947L PRACTICUM IN NURSING EDUCATION (4)
PR: Practicum in Clinical Nursing I, Nursing Education in Institutions of Higher Education, and Curriculum and Instruction in Nursing Education, or permission of faculty. The practicum experience focuses on the application of educational concepts and instructional strategies in a variety of educational settings in nursing including Associate Degree, Baccalaureate and inservice education settings.

NUR 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

NUR 6171C NURSING EDUCATION IN INSTITUTIONS OF HIGHER EDUCATION (2)
PR: Permission of faculty. An examination of the historical development of nursing education within higher education, issues in higher education and their effect on nursing education, and the future role of nursing education in institutions of higher education.

NUR 6216C MANAGEMENT IN CLINICAL NURSING PRACTICE (2)
Explores management concepts including a variety of theoretical and clinical approaches to the nursing management of patient care in a variety of patient care settings.

NUR 6227 ROLE DEVELOPMENT I (2)
PR: Admission to program. Foundations of Nursing Theory, or permission of faculty. Combined lecture/seminar series which focuses on an exploration of role theory and its application to advanced nurse roles in the health delivery system.

NUR 6228 ROLE DEVELOPMENT II (2)
PR: Role Development I. An interdisciplinary seminar which focuses on the professional relationships of health care specialists in meeting needs of clients in a variety of clinical and community settings.

NUR 6293C FACTORS INFLUENCING HEALTH CARE (2)
PR: Admission to program or permission of faculty. An interdisciplinary course that focuses on contemporary social, political and economic issues related to health care and legal-ethical concepts applicable to the decision-making process in nursing practice, education and research.

NUR 6353C CURRICULUM AND INSTRUCTION IN NURSING EDUCATION (2)
PR: Permission of faculty. Trends and issues in curriculum development, faculty roles, instructional strategies, internal and external factors influencing decisions in curriculum and instruction and implications for their utilization in nursing programs.

NUR 6370 NURSING RESEARCH (3)
PR: Foundations of Nursing Theory, or permission of faculty. Includes an overview of research in nursing, identification of researchable problems, design and analysis of research proposals and research methodologies and strategies applicable to nursing.

NUR 6510 FOUNDATIONS OF NURSING THEORY (3)
PR: Admission to program or permission of faculty. Focuses on theory development in nursing, including the history and process of theory development, relationships of theoretical frameworks and conceptual systems and analysis of selected conceptual models as a basis for nursing diagnosis.

COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
AFRICAN AND AFRO-AMERICAN STUDIES

UNDERGRADUATE COURSES
AFA 2001 INTRODUCTION TO AFRO-AMERICAN STUDIES (3)
Fundamental perspectives on the nature and meaning of the Afro-American experience and the role of Afro-American

Studied in articulating major problems in American and world society.

AFA 4150 AFRICA AND THE UNITED STATES (3)
A consideration of the nature and character of African cultural survivals in America including an examination of the historical and current political, economic, and cultural relations between the United States and Africa.
AFA 4331 SOCIAL INSTITUTIONS AND THE Ghetto
A study of social institutions as they relate to the American Black ghetto, with emphasis on social systems operating within and on the ghetto.

AFA 4900 DIRECTED READINGS
Independent readings in a particular area of Afro-American Studies, selected by student and instructor.

AFA 4931 SELECTED TOPICS IN AFRO-AMERICAN STUDIES
Topics offered are selected to reflect student needs and faculty interests. In depth study in such areas as the Black Student and the American Educational Process; the Black Experience in the Americas; European Expansion in Africa to 19th century; Contemporary Economic Problems in Africa.

AFH 3100 INTRODUCTION TO AFRICAN HISTORY
An outline survey of pre-colonial African history including a prefatory introduction to the use of primary sources (such as archaeology, oral tradition, cultural anthropology, comparative linguistics, documents) in reconstructing the African past. (Also listed under History.)

AFH 3200 AFRICAN HISTORY SINCE 1850
Survey of the colonial and post-colonial history of Africa. Emphasis on the impact of European and other alien influences on the continent, emergence of independent African states and post independence problems of nation building and economic development. (Also listed under History.)

AFS 3311 THE AFRICAN DIASPORA AND PAN-AFRICANISM
An examination of the African Diaspora and the influence of African culture and civilization on the growth and development of world cultures. Emphasis on the extent to which African culture has enriched the development of mankind, the cultural significance of African voyages and migrations to Asia, Europe and the Americas, and the historical quest for racial and continental pan-Africanism including Garveyism.

AFS 4321 EDUCATIONAL DEVELOPMENT IN THE AFRICAN WORLD
An examination of educational systems and experiences of African peoples' cultural past and needs for their future. In tracing the development of education in the African world, close attention will be paid to changing structures and functions of education as manifestations of governmental needs and desires. Similarities and contrasts of African and Afro-American educational patterns will be explored.

AFS 4910 RESEARCH AND FIELD STUDIES
A course linking the study pursued by the student with research and work projects in the Tampa Black community.

AMH 3571, 3572 AFRO-AMERICAN HISTORY
A survey of the African-American history in the Western Hemisphere. Emphasis on the experience in North America (AMH 3571, 1493-1865; AMH 3572, 1865-to present).

CPO 4204 GOVERNMENT AND POLITICS OF AFRICA
Designed to provide the information and analytical tools necessary to interpret current Sub-Saharan African politics. Survey of political organizations in traditional African societies; politics under colonial rule; the struggle for independence, and post-independence politics.

CPO 4244 GOVERNMENT AND POLITICS OF EAST, CENTRAL AND SOUTHERN AFRICA
In depth study of political developments, ideologies and modernization in East, Central and Southern Africa including race relations and white minority rule in Southern Africa.

CPO 4254 GOVERNMENT AND POLITICS OF WEST AFRICA
In depth study of government, political systems and processes in West Africa including political developments, ideologies, problems and prospects of political and economic development and military regimes in the area.

ECF 4143 BLACK AMERICANS IN THE AMERICAN ECONOMIC PROCESS
Brief economic history of Black Americans emphasizing the impact of racial discrimination and evaluating proposals for improvement as they apply to Black Americans and other minority groups.

HUM 3420 ARTS AND MUSIC OF THE AFRICAN PEOPLE
An examination of the visual arts—painting, sculpture, architecture and music of African people in the Sub-Saharan Africa, the Caribbean and the United States. Particular attention to how blacks have expressed the meaning, suffering and triumph of their lives through legitimate theatre, visual arts, and musicals and the role of black artists in the historical struggle for black consciousness and liberation.

INR 4254 AFRICA IN WORLD POLITICS
Study of international relations in the new Africa including the relations of the new states with major world powers and their role in the United Nations.

PHM 4120 CONTEMPORARY BLACK PHILOSOPHY
Major themes and participants in the Black liberation movement since 1900.

PUP 3313 BLACKS IN AMERICAN POLITICAL PROCESS
An examination of the political experience of blacks in the American political process including their political socialization, and struggle to become effective participants in the American political process.

GRADUATE COURSES

AFH 5205 SEMINAR: AFRICA FROM COLONIAL TIMES TO THE PRESENT
PR: CI. An in-depth examination of Africa's colonial heritage and post independence efforts at nation building, economic development and eradication of the remnants of colonialism, and other topics including; historical and contemporary efforts towards African continental unity, African nonalignment and relations between African states and the former colonial powers and other major world powers.

AFH 5295 SEMINAR: AFRICA CONTEMPORARY ISSUES
PR: CI. An in-depth examination of major contemporary social and political issues in the African continent including their domestic and international dimensions.

INR 5257 SEMINAR: AFRICA AND THE UNITED STATES IN WORLD AFFAIRS
PR: CI. An in-depth examination of African-American relations since colonial days in the New World and in Africa with emphasis on the post World War II period.

SSI 5934 SELECTED TOPICS
PR: CI plus senior standing or graduate status. May be repeated. To provide advanced students with interdisciplinary study of selected topics. (Also offered under Social Sciences Interdisciplinary.)

ANTHROPOLOGY

UNDERGRADUATE COURSES

ANT 2000 INTRODUCTION TO ANTHROPOLOGY
An introduction to anthropology, the study of the human species in biological and social perspective. The course surveys the four major branches of anthropology: physical anthropology (human biology), archaeology (the analysis of the prehistoric and historic remains of human cultures), anthropological linguistics (the analysis of language in its cultural context) and cultural anthropology (the comparative study of the cultures of peoples living in the world today, be they in tribal, peasant, or urban societies).

ANT 3005 THE ANTHROPOLOGICAL PERSPECTIVE
This course, designed for non-anthropology majors only, presents the basic concepts of anthropology as they are relevant to contemporary life. It aims at enabling the non-major to understand the anthropologist's view of the human species as adapting through biosocial means to life on this planet. May not be counted for credit toward an anthropology major.
ANT 3100 ARCHAEOLOGY (3)
PR: ANT 2000 or CI. The study of humankind from its beginnings up to and including the historic period through the recovery, description, and analysis of the remains of past cultures and societies. Emphasis on the theory, methods, and goals of archaeology as part of anthropology.

ANT 3410 CULTURAL ANTHROPOLOGY (3)
PR: ANT 2000 or CI. A survey of modern cultural anthropology. The course includes discussion of major methods and orientations to the study of the world’s peoples. Representative case studies are used to demonstrate variations in human adaptations and to encourage an appreciation of diverse values and lifestyles.

ANT 3511 PHYSICAL ANTHROPOLOGY (3)
PR: ANT 2000 or CI. Non-human primates, the fossil record and the biology of races are surveyed in order to understand the human animal as a product of biosocial phenomena. Anatomy, genetics, culture and evolution are emphasized.

ANT 3610 ANTHROPOLOGICAL LINGUISTICS (3)
PR: ANT 2000 or CI. The comparative study of language in its cultural context, especially emphasizing the role of language in the cultural interpretation of physical and social reality.

ANT 4034 HISTORY OF ANTHROPOLOGICAL THEORY (3)
PR: Senior standing with major in anthropology or equivalent. The major concepts that form the anthropological view of humanity are viewed in historical perspective. Basic ideas of the western philosophical tradition are analyzed from the Greeks to the 19th Century when they became incorporated into the new discipline of anthropology. Emphasis is placed upon archaeological developments on these themes are considered.

ANT 4124 FIELD METHODS IN ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. This course is normally offered as part of a Summer Field Session and students also take Florida Archaeology and Laboratory Methods in Archaeology. Emphasis is on appropriate methods of archaeological excavation and recovery and recording of data.

ANT 4133 UNDERWATER ARCHAEOLOGY (3)
PR: ANT 2000, ANT 3100 or CI. This course covers the methods, theory and history of underwater archaeology. Diving history and physiology are considered. Emphasis on underwater archaeology as anthropology and the management of underwater archaeological resources.

ANT 4153 NORTH AMERICAN ARCHAEOLOGY (3)
PR: ANT 2000, ANT 3100 or CI. An examination of the evidence which ties the settlement of North America to people from Asia some 20,000 years ago through the development of aboriginal culture to the period of European conquest. Emphasis is placed upon processual development by examining the material culture at selected sites from all time periods. No field work is involved.

ANT 4158 FLORIDA ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. The content of prehistoric cultures such as Paleoindian, Weeden Island, and Safety Harbor are reviewed and examined in terms of their temporal and spatial relationships to each other and the Eastern U.S. The course is normally offered as part of a Summer Field Session and students also take Field Methods in Archaeology and Laboratory Methods in Archaeology.

ANT 4162 SOUTH AMERICAN ARCHAEOLOGY (3)
PR: ANT 2000, ANT 3100 or CI. This course describes and analyzes the sequence of cultural development in prehistoric South America. Cultures such as the Inca, Chavin, Mochica, Wari, Chimú are included, with emphasis on the environmental setting and the relationship between cultural ecology and the growth of civilization.

ANT 4163 MESOAMERICAN ARCHAEOLOGY (3)
PR: ANT 2000, ANT 3100 or CI. The chronological sequence from its beginnings through Protohistoric development is described and analyzed. Cultures such as the Maya, Aztec, Mixtec, Zapotec, Olmec, and Toltec are included, with emphasis on the environmental setting and the relationship between cultural ecology and the growth of civilization.

ANT 4172 HISTORICAL ARCHAEOLOGY (3)
PR: ANT 2000, ANT 3100 or CI. A survey and analysis of archaeology focused on the historic period. Laboratory research with data recovered from historic sites in addition to classwork.

ANT 4180 LABORATORY METHODS IN ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. This course is normally offered as part of a Summer Field Session and students also enroll in Field Methods in Archaeology and Laboratory Methods in Archaeology. Data recovered in excavation are cleaned, catalogued, identified, and analyzed in the laboratory.

ANT 4181 MUSEUM METHODS (4)
PR: ANT 2000, ANT 3100 or CI. Design, preparation and installation of exhibits in the Department of Anthropology Teaching Exhibit Gallery. Emphasis on theory, research, design and construction. Discussion of museum-related issues such as administration.

ANT 4182 CONTEMPORARY PROBLEMS IN ARCHAEOLOGY (3)
PR: ANT 2000, ANT 3100 or CI. This course focuses on the development and implications of the "new" or "processual" archaeology. The relationship between current activities in archaeology and the philosophy of science will be considered. Theory and method in contemporary archaeology will be compared to theory and method in contemporary anthropology.

ANT 4226 ANTHROPOLOGY OF ART (3)
PR: ANT 2000, ANT 3410 or CI. An examination of the relationship between the visual arts (sculpture, painting, masks, carving, etc.) and culture in non-Western societies. Emphasis on formal symbolic and functional comparative analysis of specific art types based on crosscultural materials. Consideration of diffusion and change of art forms, commercial and ethnic arts, and role of the artist.

ANT 4231 FOLKLORE (3)
PR: ANT 2000, ANT 3410 or CI. A survey of the field of folkloristics, the course considers the history of folklore collection and analysis, the major folklore schools, and the techniques of collecting and classifying such materials as myths, folktales, riddles, jokes, games, and items of material culture. African (or African derived), Oceanic and Native American societies will be surveyed.

ANT 4241 ANTHROPOLOGY OF RELIGION (3)
PR: ANT 2000, ANT 3410 or CI. The study of the social and cultural aspects of religion. Religious activities in primitive and modern societies will be discussed. Ritual behavior, religious practitioners and symbols of belief will be considered in light of their impact on the social, political or economic aspects of peoples' lives.

ANT 4302 WOMEN IN CROSS-CULTURAL PERSPECTIVE (3)
PR: ANT 2000, ANT 3410 or CI. A cross-cultural perspective on women. The course focuses on various theories, models and beliefs about male-female behaviors and interactions in human cultures throughout history and in various societies in the world today. (Also offered under Women's Studies.)

ANT 4305 VISUAL ANTHROPOLOGY (3)
PR: ANT 2000, ANT 3410 or CI. The use of photographic techniques for the recording and analysis of human activities. The study of ethnographic photography as both art and science, and the production of an anthropological study that expresses the goal of "visual literacy". Review and evaluation of the uses of visual techniques and the evidences they provide to the social scientist.

ANT 4312 CULTURES OF NATIVE NORTH AMERICA (3)
PR: ANT 2000, ANT 3410 or CI. An examination of the evidence for the origin and antiquity of human beings in North America and of patterns of regional development until the period of contact with European colonists. Emphasis on varieties of ecological adaptation, social, political and religious systems, enculturation and worldview, folkloric and visual art.

ANT 4316 CULTURES OF THE CONTEMPORARY UNITED STATES (3)
PR: ANT 2000, ANT 3410 or CI. An examination of anthropology's contribution to the study of contemporary United States society. Special concerns include the American
community, change and continuity in American values and lifestyles, and the historical background and recent manifestations of human problems in the United States.

**ANT 4326 CULTURES OF MESOAMERICA** (3)
PR: ANT 2000, ANT 3410 or Cl. A review of the peoples of modern Mesoamerica, with emphasis on Mexico and Guatemala. The course includes discussion of the historical development of these two countries, contemporary values and interpersonal relationships, control and patterns of rural and urban life.

**ANT 4340 CULTURES OF THE CARIBBEAN** (3)
PR: ANT 2000, ANT 3410 or Cl. The islands and mainland territories of the Caribbean are studied in social anthropological perspective. Main themes include: the depopulation of the aboriginal population and the resettlement of the area via slavery, indenture and migration; contemporary ethnic heterogeneity; economic problems of Third World microstates; development of a modern social and political consciousness. Religious diversity, music, the graphic arts and the literature of the contemporary Caribbean will also be surveyed.

**ANT 4367 CULTURES OF THE MIDDLE EAST** (3)
PR: ANT 2000, ANT 3410 or Cl. This course describes the environment and cultural ecology of the Middle East and analyzes how they have influenced the variety of subcultures of the region. The rise and fall of the "great civilization" and the "little tradition" of the enduring folk cultures will be delineated. Contemporary culture change will be analyzed in a temporal perspective.

**ANT 4432 CULTURE AND PERSONALITY** (3)
PR: ANT 2000, ANT 3410 or Cl. The interplay between the individual personality and the social group to which he/she belongs is studied cross-culturally. Analysis of descriptive studies from various cultures of child-rearing practices, psychosomatic illness and curing. Discussion of theories and models of personality development with special reference to their applicability to the emerging field of cross-cultural mental health planning.

**ANT 4442 URBAN ANTHROPOLOGY** (3)
PR: ANT 2000, ANT 3410 or Cl. A course devoted to the anthropological study of urban origins, growth and current human problems associated with city environments. Particular emphasis is placed on the ethnography of city life and its relationship to the practical applications of urban research.

**ANT 4462 MEDICAL ANTHROPOLOGY** (3)
PR: ANT 2000, ANT 3410 or Cl. The study of health and human behavior in cross-cultural perspective. Main themes include: the impact of disease on the development of human culture; comparative studies of curing practices; medical systems in their relationship to ideology. Emphasis on understanding the role of medicine, and the behavior of both practitioners and patients, in modern societies.

**ANT 4495 RESEARCH METHODS IN CULTURAL ANTHROPOLOGY** (3)
PR: Cl. The stages in the development and execution of ethnological research are discussed and practiced. Literature search, hypothesis formulation, selection of data collection techniques, elicitation of information, data analysis and report presentation are stressed. Research design models from the case literature are studied and supervised research in the local community is designed and carried out.

**ANT 4542 CULTURE AND PHYSICAL ANTHROPOLOGY** (3)
PR: ANT 2000, ANT 3511 or Cl. A survey of the many ways in which behavior and technology influence the biology of prehistoric and modern human populations. Phenomena such as mating practices, urbanization and dietary habits are related to modern societies.

**ANT 4552 EVOLUTIONARY BIOLOGY OF THE PRIMATES** (3)
PR: ANT 2000, ANT 3511 or Cl. A survey of non-human primates focusing on biological and evolutionary patterns. Anatomy, genetics and evolution are stressed; major primate types are surveyed for their biological adaptation. Primate sociobiology is discussed.

**ANT 4583 THE PHYSICAL ANTHROPOLOGY OF PREHISTORIC HUMANS** (3)
PR: ANT 2000, ANT 3511 or Cl. An overview of evolution and biological variations of human races. Anatomical, morphological and physiological patterns are surveyed geographically. Cultural influences on racial biology are explored.

**ANT 4586 THE PHYSICAL ANTHROPOLOGY OF LIVING HUMANS** (3)
PR: ANT 2000, ANT 3511 or Cl. A survey of the fossil record from early primates through the ascent of Homo Sapiens Sapiens, focusing on the human lineage. Bioisocial patterns and cultures of the past are also covered.

**ANT 4620 LANGUAGE AND CULTURE** (3)
PR: ANT 2000, ANT 3610 or Cl. An examination of the relationships between language and culture in cross-cultural perspective. The extent to which languages shape the world views of their speakers will be explored in depth. At issue will be the nature and degree of fit between linguistic and cultural systems of knowledge.

**ANT 4705 APPLIED ANTHROPOLOGY** (3)
PR: ANT 2000, ANT 3410 or Cl. A review of approaches applying the anthropological perspective to contemporary human problems. Particular emphasis placed on public policy issues in United States society. The course includes discussion of the historical development of applied anthropology, problems of economic development in the Third World, and the ethics of applied research and intervention.

**ANT 4723 ANTHROPOLOGY AND EDUCATION** (3)
PR: ANT 2000, 3410, or Cl. An examination of the processes, formal and informal, conscious and unconscious, by which human beings learn to become functioning members of a society. Comparative analysis of patterns of education based on cross-cultural data. Discussion of problems of minority education and the teaching of anthropology in primary/secondary schools.

**ANT 4750 ETHNOGRAPHY OF COMMUNICATION** (3)
PR: ANT 2000, ANT 3610 or Cl. An exploration of the role of language and other modes of communication in the social settings of speech communities. Reading, discussions, and student field projects will focus on the description and analysis of communicative resources in ethnographic contexts.

**ANT 4901 DIRECTED READING** (1-4)
PR: Cl. Individual guidance in concentrated reading on a selected topic in anthropology.

**ANT 4907 INDIVIDUAL RESEARCH** (2-4)
PR: Cl. Individual guidance in a selected research project.

**ANT 4930 SPECIAL TOPICS IN ANTHROPOLOGY** (3)
PR: Cl. Topics to be chosen by students and instructor permitting newly developing subsidisciplinary special interests to be explored. May be repeated as topics vary.

**ANT 4935 SENIOR SEMINAR IN ANTHROPOLOGY** (3)
PR: Senior standing with major in anthropology, or equivalent. Through seminar discussion of readings and student papers, students rethink and reevaluate the nature of anthropology as a discipline and the integration of its branches and specialty fields. On this basis each student develops and articulates his/her current image and vision of anthropology.

**MIH 4521 FOLK MUSIC** (3)
PR: ANT 2000, ANT 3410 or Cl. An examination of ethnic musics in America, emphasizing the functions of folk music in rural and urban settings. Materials drawn cross-culturally are used in both religious and secular forms. When feasible, classwork is supplemented by live performances. Technical knowledge of music is not required.

**GRADUATE COURSES**

**ANT 5904 DIRECTED READING** (1-4)
PR: Cl. Individual guidance in concentrated reading on a selected topic in anthropology.

**ANT 5915 INDIVIDUAL RESEARCH** (2-4)
PR: Cl. Individual guidance in a selected research project.

**ANT 5937 SEMINAR IN ANTHROPOLOGY** (2-4)
PR: Cl. Topics to be chosen by students and instructor.
ANT 6186 SEMINAR IN ARCHAEOLOGY (3)
PR: Graduate standing. One of four core courses required of all students. A critical survey of archaeology emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6196 METHODS IN PUBLIC ARCHAEOLOGY (3)
PR: Three of the core courses, or CI. Field techniques, methods of collection, analysis, and interpretation of data. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

Lec.-lab, field trips.

ANT 6197 SELECTED TOPICS IN PUBLIC ARCHAEOLOGY (3)
PR: Three of the core courses, or CI. Current topical issues in public archaeology. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

ANT 6198 REGIONAL PROBLEMS IN PUBLIC ARCHAEOLOGY (3)
PR: Three of the core courses, or CI. Contemporary problems in public archaeology in the context of a specific region. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

ANT 6446 METHODS IN URBAN ANTHROPOLOGY (3)
PR: Three of the core courses, or CI. Field techniques, methods of collection, analysis, and interpretation of data. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

Lec.-lab, field trips.

ANT 6447 SELECTED TOPICS IN URBAN ANTHROPOLOGY (3)
PR: Three of the core courses, or CI. Current topical issues in urban anthropology. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

ANT 6448 REGIONAL PROBLEMS IN URBAN ANTHROPOLOGY (3)
PR: Three of the core courses, or CI. Contemporary problems in urban anthropology in the context of a specific region. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

ANT 6463 REGIONAL PROBLEMS IN MEDICAL ANTHROPOLOGY (3)
PR: Three of the core courses, or CI. Contemporary problems in medical anthropology in the context of a specific region. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

ANT 6469 SELECTED TOPICS IN MEDICAL ANTHROPOLOGY (3)
PR: Three of the core courses, or CI. Current topical issues in medical anthropology. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

ANT 6490 SEMINAR IN CULTURAL ANTHROPOLOGY (3)
PR: Graduate standing. One of four core courses required of all students. A critical survey of cultural anthropology emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6588 SEMINAR IN PHYSICAL ANTHROPOLOGY (3)
PR: Graduate standing. One of four core courses required of all students. A critical survey of physical anthropology emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6676 SEMINAR IN ANTHROPOLOGICAL LINGUISTICS (3)
PR: Graduate standing. One of four core courses required of all students. A critical survey of anthropological linguistics emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6737 METHODS IN MEDICAL ANTHROPOLOGY (3)
PR: Three of the core courses, or CI. Field techniques, methods of collection, analysis and interpretation of data. May be repeated up to 6 credit hours as topics vary. Open to non-majors.

Lec.-lab, field trips.

ANT 6908 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

ANT 6915 DIRECTED RESEARCH (INTERNSHIP) (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ANT 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

COMMUNICOLOGY

UNDERGRADUATE COURSES

SPA 2001 SURVEY OF COMMUNICATION DISORDERS (2)
A general survey course concerning the nature and prevention of disorders of communication.

SPA 3020 INTRODUCTION TO COMMUNICATION DISORDERS (4)
The scope of speech pathology as a profession and a field of study. An introduction to speech and language disorders (articulation, stuttering, voice, aphasia, etc.); etiologies, major treatment approaches, and research findings.

SPA 3080 INTRODUCTION TO RESEARCH PROCEDURES IN COMMUNICOLOGY (4)
Perspective on research in speech pathology and audiology. Introduction to multivariate design considerations as they apply to research, speech and hearing laboratory and clinical settings.

Analysis of basic hypothesis testing.

SPA 3101 ANATOMY OF THE SPEECH AND HEARING MECHANISM (4)
The neurological and anatomical basis of communication disorders. Comparisons of normal and pathological organic structures and their functional dynamics. Separate sections concentrating on normal and abnormal aural physiology are scheduled for those students with a primary emphasis in audiology.

SPA 3110 INTRODUCTION TO HEARING SCIENCE (4)
The scope of audiology as a profession and field of study. An introduction to the study of hearing impairments: classifications, etiologies, major treatment approaches, and research findings.

SPA 3117 INTRODUCTION TO SPEECH SCIENCE (4)
PR: SPA 3020, SPA 3101. Concentrated study of the acoustic, physiological and perceptual aspects of sound as related to normal and pathological speech communication. Introduction to instrumentation and measurement procedures.

SPA 3401 COMMUNICATION DISORDERS IN THE PUBLIC SCHOOLS (1-12)
Observation and participation in speech pathology and audiology practice in the University clinical laboratory.

SPA 4250 COMMUNICATION DISORDERS I: VOICE/ARTICULATION/STUTTERING (3)

SPA 4255 COMMUNICATION DISORDERS II: CEREBRAL PALSY/CLEFT PALATE/APHASIA (3)
PR: LIN 3010, LIN 4710 and admission to program. The scope of speech pathology as a profession and field of study. An introduction to communication disorders associated with the peripheral speech mechanism (articulation, voice, etc.); identification, etiologies, and major treatment approaches.

SPA 4333 BASIC MANUAL COMMUNICATION (2)
An introduction to the American Sign Language (ASL) as used among the adult deaf community. Discussion of ASL and its linguistic features as well as an introduction to other manual communication systems and philosophy with demonstrations. Students will acquire the skill to read receptively at least 600 signs and to use those signs expressively. Demonstrations of sign production will be provided with practice periods and an opportunity for interaction with the local deaf community will be afforded the student.

SPA 4363 NATURE AND NEEDS OF THE HEARING IMPAIRED (4)
A study of the effects of auditory disorders upon the organization and expression of behavioral patterns as they relate to motivation, adjustment and personality.
COMMUNICOLOGY

GRADUATE COURSES

SPA 5002 THE SCIENCE OF COMMUNICATION DISORDERS (4) 
PR: SPA 3020 or SPA 3110 or CI. The application of behavioral and learning principles to the study of the normal development of speech, language and hearing and to the management of disorders.

SPA 5132 AUDIOLOGY INSTRUMENTATION (4) 
PR: CI. Calibration, usage and specific applications of specialized instruments available in dealing with the identification and measurement of hearing disorders. Includes: sound level recorders, audiometers, and the electrophysiological measurement devices.

SPA 5200 COMMUNICATION DISORDERS: ARTICULATION (3) 
PR: CI. An examination of normal and deviant articulatory acquisition and behavior. Presentation of major theoretical orientations and the therapeutic principles based upon them.

SPA 5210 COMMUNICATION DISORDERS: VOICE (3) 
PR: CI. A comprehensive study of the medical and physical aspects of voice disorders. Primary emphasis is on therapeutic management.

SPA 5222 COMMUNICATION DISORDERS: STUTTERING (3) 
PR: CI. A comprehensive study of the diagnosis and modification of stuttering based on a two-factor model. Other major theories are considered and evaluated.

SPA 5303 ADVANCED HEARING SCIENCE (4) 
PR: Admittance to the Program or CI. Introduction to psychoacoustical phenomenon as it relates to the measurement of hearing. Overview of principles and methods of identification audiology with emphasis on neonatal, preschool, and school age populations. Procedures for determining pure tone thresholds including the application of masking techniques. Fundamental concepts related to hearing aids and their benefits. Management of hearing impaired individuals including counseling.

SPA 5312 PERIPHERAL AND CENTRAL AUDITORY TESTS (4) 
PR: CI. Advanced study of psychoacoustical phenomenon as it relates to the measurement of hearing. Instruction emphasizing principles and methods of determining hearing acuity through the use of speech stimuli. Management of clients from pertinent case histories through post-evaluation recommendations. Thorough consideration of hearing aids with special attention on techniques of selecting and fitting aids in a clinical setting.

SPA 5402 COMMUNICATION DISORDERS: LANGUAGE (3) 
PR: CI. Examination of research and clinical literature pertaining major theoretical orientations pertaining to the etiology, evaluations, and treatment of those factors that hinder or interrupt normal language acquisition or function.

SPA 5550 METHODS FOR ORAL COMMUNICATION DISORDERS (4) 
PR: SPA 5552 or CI. An in-depth analysis of classic and contemporary methods employed in the management of communicatively impaired individuals. Experimental approaches are reviewed through current medical, psychological, speech, language and hearing journals.

SPA 5552 EVALUATION OF ORAL COMMUNICATION DISORDERS (4) 
PR: Admittance to the Program or CI. The administration, evaluation, and reporting of diagnostic tests and procedures used in the assessment of speech and language disorders.

SPA 5557 SPEECH PATHOLOGY AND AUDIOLOGY PRACTICUM (1-8) 
PR: CI. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

SPA 5600 MANAGEMENT OF COMMUNICATION DISORDERS (3) 
PR: CI. The planning of programs for individuals with speech, language, and hearing impairments. Includes administration of programs in public schools, clinics, and private practice.

SPA 5930 SELECTED TOPICS (3) 
PR: CI. A reading program of topics in speech pathology and/or audiology conducted under the supervision of a faculty member. May be repeated three times.

SPA 6106 NEUROLOGICAL CORRELATES OF LANGUAGE (3) 
PR: CC or delegate. Review of the anatomy and physiology of the nervous system. Discuss neurological correlates of receptive and expressive language in verbal and non-verbal transmission and feedback.

SPA 6231 CEREBRAL PALSY (3) 
PR: CI. A study of the medical, physical, occupational, speech, language, and hearing problems of the cerebral palsied. Therapy techniques are reviewed and evaluated.

SPA 6245 CLEFT PALATE (3) 
PR: CI. An in-depth study of speech, language and hearing problems associated with cleft lip and cleft palate. Consideration is given to a multidisciplinary approach to therapy and rehabilitation.

SPA 6305 CHILD AUDIOLOGY (3) 

SPA 6322 TECHNIQUES OF AUDITORY TRAINING AND SPEECHREADING (4) 
PR: CI. A careful analysis of the visual and auditory sense modalities as input systems used to facilitate communication in the hearing impaired. Particular attention is given to theories and models which explain the interrelationship of the two modalities. Methods and techniques employed in the habilitation of both modalities for the hearing impaired will be completely delineated.

SPA 6332 SPEECH FOR THE HEARING IMPAIRED (4) 
PR: SPA 3020, SPA 3110, SPA 4363. Application and evaluation of techniques for teaching symbolic functioning to children with hearing impairments. Consideration of developmental and remedial aspects of reading.

SPA 6335 ADVANCED MANUAL COMMUNICATION AND BASIC INTERPRETING (2) 
PR: SPA 4333 or equivalent and CI. A continuation of basic course which expands students signing skills and presents a thorough exposition of sign systems aimed at signing in an English language context—Seeing Essential English (SEE I), Signing Exact English (SEE II), Linguistics of Visual English (LVE), and Signed English. Those systems will be compared and contrasted with demonstrations. Interpreting for deaf individuals will be introduced. The introduction will include a discussion of the Interpreter's Code of Ethics and interpreting in different situations. Opportunity for practice of skills. May be repeated once.

SPA 6345 HEARING DISORDERS (3) 
PR: SPA 6307 or CI. The compilation and interpretation of hearing test data for diagnosing hearing impairment. Investigation of medical and surgical techniques for the treatment of hearing loss, coordinating information for planning the treatment and rehabilitation of the hearing impaired, including the involvement of other professionals.

SPA 6354 HEARING CONSERVATION (3) 
PR: SPA 5312 or CI. A comprehensive study of all aspects of hearing conservation especially those relating to the detection and prevention of hearing loss in both children and adult populations. Special attention is given to problems encountered by industry.

SPA 6400 PEDIATRIC LANGUAGE DISORDERS (3) 
PR: CI. An examination of the pre-verbal and language skills of the infant and preschool child and the Speech Pathologist's role in the diagnosis, treatment and parent-trainer for these children.

SPA 6410 APHASIA (3) 
PR: CI. A consideration of the neurological and psychological aspects of aphasia as they relate to communication disorders. Specific language therapy approaches are discussed and evaluated.
SPA 6423 LANGUAGE FOR THE HEARING IMPAIRED
PR: SPA 3020, SPA 3110, SPA 4363 or Cl. Techniques and materials of teaching language to children with auditory disorders. Evaluation and analysis of contemporary methods.

SPA 6505 PRACTICUM
PR: Cl. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

SPA 6553 ADVANCED DIFFERENTIAL DIAGNOSIS AND TREATMENT PLANNING
PR: Cl. The interpretation of evaluation results and the integration of these data in order to make a differential diagnosis leading to an appropriate therapy plan. The administration, evaluation, and reporting of more advanced evaluation techniques not covered in SPA 5552.

SPA 6825 RESEARCH PROCEDURES IN SPEECH PATHOLOGY AND AUDIOLOGY
PR: Cl. Advanced research and experimental design techniques employed in clinical and laboratory settings in speech pathology and audiology. Introduction to research technologies: review of stylistic considerations in research writing.

SPA 6906 INDEPENDENT STUDY
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

SPA 6910 DIRECTED RESEARCH
PR: GR. Master's level. Repeatable. (S/U only.)

SPA 6930 SELECTED TOPICS
PR: Cl. A reading program of topics in speech pathology and/ or audiology conducted under the supervision of a faculty member. May be repeated three times.

SPA 6971 THESIS: MASTER'S
Repeatable. (S/U only.)

CRIMINAL JUSTICE

UNDERGRADUATE COURSES

CCJ 3020 SURVEY OF CRIMINAL JUSTICE SYSTEM
PR: PSY 2012, SOC 2000, or equivalent or Cl. An introduction to the major institutions associated with criminal justice, their structure, personnel, objectives, resources, and operation. Course content also includes developing an understanding of criminal law, terminology and procedure. This course is designed to provide a broad overview of the activities, language, concepts and career opportunities of the entire Criminal Justice System. The course may include an exploratory project, encouraging the student to use his or her own initiative to explore, observe and interview in one or more local institutions of criminal justice.

CCJ 3280 CRIMINAL LAW I
PR: CCJ 3020, POS 2041 or Cl. Content of this course examines the effects upon the criminal justice system of the freedoms of habeas corpus, bills of attainders and ex post facto. Thereupon, the course follows the accused through the paths of criminal justice from arrest, to pretrial procedures, to the court and ultimately through corrections.

CCJ 3620 THEORIES AND TYPOLOGIES OF CRIMINAL BEHAVIOR
PR: CCJ 3020. This course is designed to provide a basic understanding of the complex factors related to crime in America. Focus will be centered on reviewing the basic issues, scope, and costs stemming from criminal activities.

CCJ 3701 RESEARCH METHODS IN CRIMINAL JUSTICE I
PR: Junior standing and CCJ 3020 or Cl. This course introduces the student to some of the fundamentals of knowledge generating processes in criminal justice.

CCJ 4110 AMERICAN LAW ENFORCEMENT SYSTEMS
This course is designed to provide a comprehensive examination of the American law enforcement system at the federal, state, and local levels, and to assess career opportunities at each respective level. This course will also provide an in-depth examination of the human dimension component of police work both within the law enforcement environment and within the community.

CCJ 4130 THE LAW ENFORCEMENT OFFICER AND THE COMMUNITY
PR: Junior standing plus CCJ 4110 or Cl. This course examines the area of human relations especially as it appliess to police functions within the community. Topics of prejudice and discrimination are emphasized.

CCJ 4140 CRIMINAL INVESTIGATION
This course is designed to examine the major components of Criminal Investigation. Special attention will be given to the scientific aspects of criminal investigation, the management of major cases, legal considerations, crime prevention, and the value of the behavioral sciences in the investigation of crime.

CCJ 4202 JUVENILE JUSTICE SYSTEM
PR: CCJ 3020 or Cl. This course is intended to provide coverage of the juvenile and family courts, their clientele, and the complex of human services agencies and facilities that contribute to efforts at juvenile correctional intervention. Also emphasized in this course are the factors which appear to contribute significantly to juvenile delinquency and crime.

CCJ 4283 CRIMINAL LAW II
PR: Criminal Law I. This course provides a survey of criminal procedure which emphasizes the rules applied and enforced by the courts with respect to arrest, search and seizure, and the processing of criminal cases through the court system.

CCJ 4330 ALTERNATIVES TO INCARCERATION
PR: Junior standing plus CCJ 4360 or Cl. This course explores a variety of alternatives to imprisoning the offender, including probation, parole, diversion, and other community-based intervention and treatment approaches.

CCJ 4340 INTERVENTION TECHNIQUES AND STRATEGIES
PR: Senior standing, CCJ 4540, and Cl. Designed to introduce the student to theories and methods underlying treatment modalities currently employed in corrections.

CCJ 4360 AMERICAN CORRECTIONAL SYSTEMS
PR: Junior standing plus CCJ 3620 or Cl. The scope of this course relates to the analysis of the different treatment philosophies and techniques currently in use in the field. Attention will be given to experimental and demonstration programs as well as to generally accepted and established methods.

CCJ 4604 ABNORMAL BEHAVIOR AND CRIMINALITY
PR: CCJ 3620, CCJ 3610 (4 hours), or Cl. This course will provide a systematic introduction to the relationship between mental illness and criminality. Attention will be given to psychiatric labeling of deviant behavior and its implications for the handling of the criminal offender who may be diagnosed as "mentally ill".

CCJ 4700 RESEARCH METHODS IN CRIMINAL JUSTICE II
PR: Junior standing plus CCJ 3620 or Cl. Designed to give the criminal justice major an introduction to research methodology and the evaluation of research. This course may not be taken for credit if the student has already successfully completed STA 3122, Social Science Statistics, GEM 2111, Business and Economic Statistics I, or STA 3023, Introductory Statistics I.

CCJ 4822 PRIVATE SECURITY SYSTEMS
PR: Junior Standing plus CCJ 4110 or Cl. This course examines some of the principal methods and techniques currently used to reduce or prevent losses due to theft and casualty, including security surveys, communication- and surveillance systems, control of personnel and visitors, and the supervision and training of security forces.

*CCJ 4900 DIRECTED READING
(1-3)
PR: Cl. This course is specifically designed to enable advanced students the opportunity to do in-depth independent work in the area of criminal justice. Each student will be under the close supervision of a faculty member of the program. No more than five hours of CCJ 4900, CCJ 4910 or any combination of the two will be accepted toward the minimum number of hours required for the major.

*CCJ 4910 DIRECTED RESEARCH
(1-3)
PR: Cl. This course is designed to provide students with a
research experience in which they will work closely with faculty on the development and implementation of research projects in the area of criminal justice. No more than five hours of CCJ 4900, CCJ 4910 or any combination of the two will be accepted toward the minimum number for the major.

**CCJ 4934 SEMINAR IN CRIMINAL JUSTICE**

(3)

PR: Senior standing and CI. The seminar (multi-course series—variable topics) will consider the various changes occurring in the field of criminal justice with added emphasis placed on the responsibilities of careers in the field. (May be taken with different subject matter up to 12 hours.)

**CCJ 4940 INTERNSHIP FOR CRIMINAL JUSTICE MAJORS**

(3-9)

PR: Senior standing. The internship will consist of placement with one or more of the agencies comprising the criminal justice system. This course will enable the students to gain meaningful field experience related to their future careers. Each three-hour block of credit will require a minimum of ten hours of work per week within the host agency in addition to any written work or reading assignments. See requirements for the B.A. degree in Criminal Justice for the number of hours required. (S/U only.)

*Courses available only to students currently enrolled.*

**GRADUATE COURSES**

**CCJ 2685 LAW AND CRIMINAL JUSTICE**

(3)

An exposition of historical and contemporary legal principles, procedures and issues as reflected in Constitutional provisions, statutes and case law.

**CCJ 6305 THEORY, PRACTICE AND RESEARCH IN CORRECTIONS**

(3)

This course is devoted to an examination of the complex interrelationships between theory and practice in corrections, as these are affected by empirical research and systematic program evaluation.

**CCJ 6345 SUPERVISION AND TREATMENT STRATEGIES**

(3)

Designed to acquaint the beginning graduate student with general conditions, skills and techniques required in order to provide satisfactory treatment for both adult and juvenile offenders. Emphasis will be placed on familiarizing the student with those factors and conditions which facilitate treatment and the goals of treatment in a community correctional setting. In addition, several specific and widely used treatment approaches will be extensively covered and practiced during this course.

**CCJ 6402 THEORY, PRACTICE, AND RESEARCH IN LAW ENFORCEMENT**

(3)

This issues-oriented course explores the relationships among theory, practice, and research as these are reflected in the problems and challenges which confront law enforcement in a variety of contexts and on various levels, from municipal to federal operations.

**CCJ 6405 LAW ENFORCEMENT ADMINISTRATION**

(3)

This course is designed to examine the major elements of law enforcement administration and management. Special attention is given to the organizational theory and scientific management of law enforcement agencies.

**CCJ 6455 CORRECTIONAL ORGANIZATION AND ADMINISTRATION**

(3)

This course is intended to provide a comprehensive overview of the state of the art of correctional organization and administration. This course blends together the most current information from the managerial and behavioral sciences.

**CCJ 6466 RESOURCE DEVELOPMENT AND ACQUISITION**

(3)

This course is designed to acquaint students with organizations that provide financial assistance to criminal justice agencies. Stress will be placed on analysis of criteria, limitations, and feasibility of securing funds for a given project. Practical experience in proposal development, planning, and submission will be an integral requirement of the course.

**CCJ 6475 SYSTEMS ANALYSIS IN CRIMINAL JUSTICE**

(3)

PR: CCJ 6709. This focuses on the design and analysis of both existing and student created systems, with emphasis on the role of system analysis as it applies to management information systems, and computer based systems. May be repeated up to 6 semester hours.

**CCJ 6605 THEORETICAL APPROACHES TO CRIMINAL BEHAVIOR**

(3)

An introduction and comparison of major historical and contemporary theories as they relate to the explanation of criminal behavior. Attention will be given to developing, on the part of the student, a frame-of-reference by which he can organize and understand the empirical factors operating in the Criminal Justice System.

**CCJ 6705 SYSTEMATIC INQUIRY IN CRIMINAL JUSTICE**

(3)

This course is intended to introduce students to some of the basic concepts, terminology, techniques, approaches, and issues in the field of criminal justice research, with special emphasis devoted to interrelationships between theory and research, legal research and documentation, and moral and ethical issues involved in systematic inquiry.

**CCJ 6709 RESEARCH AND EVALUATION IN CRIMINAL JUSTICE I**

(3)

PR: CCJ 6705. This course offers an introduction to empirical research techniques and principles, statistics, data management, and management information procedures. Emphasis will be placed on each of these topics as they bear on monitoring and change within the criminal justice system.

**CCJ 6716 RESEARCH AND EVALUATION IN CRIMINAL JUSTICE II**

(3)

PR: CCJ 6709. This course is designed to familiarize graduate students in Criminal Justice with the principle and methods of program evaluation and evaluation research. It is oriented toward the application of research strategies to the evaluation of programs under the constraints of organizational realities, political policies, financial limitations, time deadlines, and other field circumstances.

**CCJ 6725 CORRECTIONAL PLANNING**

(3)

This course will provide the student with an in-depth examination of urban correctional planning processes. Topics included will deal with the development of personnel, budgets, and facility plans and their implementation. May be repeated up to 6 hours.

**CCJ 6726 LAW ENFORCEMENT PLANNING**

(3)

This course will examine contemporary law enforcement planning and will focus on techniques and skills required to forecast future needs of police agencies in rapidly expanding metropolitan areas.

**CCJ 6910 DIRECTED RESEARCH**

(var.)

PR: GR. Master's level. Repeatable. A maximum of five hours may be counted toward the minimum number of hours required by the department for the master's degree. (S/U only.)

**CCJ 6920 PRO SEMINAR IN CRIMINAL JUSTICE**

(1-2)

One hour is required for all students. This variable topic listing is a forum primarily for the presentation and discussion of ethical and research ideas by faculty, guests, and students to aid students in linking theory and research, in understanding contemporary, problem oriented research and in developing thesis subjects. Any issue of professional concern may be treated. At least one hour should be taken during the first semester in the program.

**CCJ 6935 TOPICS IN CRIMINAL JUSTICE**

(3)

PR: Graduate standing in the Criminal Justice Program. The field of criminal justice is characterized by a wide variety of issues and controversies that are of topical concern. This seminar provides a forum for analyzing and discussing these topics as their importance and the accumulation of data warrants. Classics in the criminal justice literature may be included among the topics for treatment in this course. May be repeated with different subject matter.

*NOTE: CCJ 4900 & CCJ 4910. (a) Students wishing to enroll must make arrangements with a faculty member during the semester prior to actually taking the course, (b) a minimum of four (4) CCJ courses must have been completed satisfactorily prior to enrollment, (c) first consideration will be given to Criminal Justice majors, and (d) individual faculty members may add additional requirements at their discretion.*
CCJ 6937 THE JUDICIAL PROCESS   (3)  
PR: CCJ 6285 or CI. This course is designed to equip the student with an understanding of the evolution and current features of the judiciary including county, state, and federal courts. The emphasis is upon the structure and operations of the courts and the roles and responsibilities of court personnel.

CCJ 6971 THESIS: MASTER’S   (var.)  
PR: CCJ 6705. Repeatable. A maximum of six hours may be counted toward the minimum number of hours required for the Master's degree. (S/U only.)

GEOGRAPHY

UNDERGRADUATE COURSES

GEO 3000 WORLD REGIONAL GEOGRAPHY   (4)  
Comparative and analytical analysis of representative regions of the world with emphasis on cultural, political, economic, and physical diversity.

GEO 3002 GENERAL GEOGRAPHY   (4)  
Selected topics in regional and topical geography offered as survey courses. Open to all students.

GEO 3194 REGIONAL GEOGRAPHY   (4)  
Variable title course to systematically study and compare special regions identified by the instructor.

GEO 3202 GEOGRAPHY OF ANGLO-AMERICA   (4)  

GEO 3260 GEOGRAPHY OF THE SOUTHEAST   (4)  

GEO 3270 GEOGRAPHY OF FLORIDA   (4)  

GEO 3300 GEOGRAPHY OF MIDDLE AMERICA   (4)  

GEO 3360 GEOGRAPHY OF THE GULF OF MEXICO   (4)  

GEO 3400 GEOGRAPHY OF LATIN AMERICA   (4)  

GEO 3410 GEOGRAPHY OF SOUTH AMERICA   (4)  

GEO 3500 GEOGRAPHY OF EUROPE   (4)  

GEO 3554 GEOGRAPHY OF THE USSR   (4)  

GEO 3600 GEOGRAPHY OF AFRICA   (4)  

GEO 3703 GEOGRAPHY OF ASIA   (4)  

GEO 1930 GEOGRAPHY OF CURRENT EVENTS   (4)  
Application of basic geographic principles of the analysis of contemporary events in various parts of the world.

GEO 3013 SYSTEMATIC GEOGRAPHY   (4)  
Principles and concepts of the discipline; maps, earth-sun relations, weather, and climate.

GEO 3370 SYSTEMATIC GEOGRAPHY   (4)  
PR: GEO 3013 or CI. Landforms and conservation of resources. Latter part of course deals with man's use of the natural environment.

GEO 3402 HUMAN GEOGRAPHY   (4)  
Systematic treatment of man's activities on earth; population, settlement, agriculture, industry, trade, transportation, and political aspects are among those considered.

GEO 3901 ELEMENTS OF GEOGRAPHY   (1)  
An independent study program in the basic elements of physical and cultural geography. Topics include maps and map reading, history of geography, earth form, weather, climate, soils, water, plants and animals, landforms and minerals, conservation, political, economic, language and religion, settlement and population, and urban. Course is designed primarily for non-majors. A student may enroll for a maximum of five hours (5 sections) during any quarter. (S/U only.)

GEO 3931C WEATHER AND MAN   (4)  
The inter-relationship between the atmospheric environment and man.

GEO 4040C MAP INTERPRETATION   (4)  
PR: GEO 3013, 3370 or CI. Analysis and synthesis of various types of maps and map projections.

GEO 4100C CARTOGRAPHY   (4)  
PR: GEO 3013, 3370 or CI. Cartographic techniques of map compilation and presentation, including generalization, symbolization, reproduction, and utilization.

GEO 4114C GEOGRAPHIC TECHNIQUES AND METHODOLOGY   (4)  
PR: GEO 3013, 3370 or CI. Selected topics in various geographic techniques and methodologies and their application.

GEO 4124C AIR PHOTO INTERPRETATION   (4)  
PR: GEO 3013, 3370 or CI. Use of air photos and other remote sensing devices in detecting, identifying, and analyzing objects on the earth's surface from the perspective of space.

GEO 4164C QUANTITATIVE METHODS   (4)  
PR: GEO 3013, 3370 or CI. Use of statistical analysis in geographic research.

GEO 4200C PHYSICAL GEOGRAPHY   (4)  
PR: GEO 3013, 3370 or CI. Man's interaction with the physical environment, including any one or a combination of the following topics: landforms, weather, climate, soils, vegetation, water.

GEO 4210 PHYSIOGRAPHY   (4)  
PR: GEO 3013, 3370 or CI. Regional analysis of the physical complex of North America, including a detailed study of landforms and their distribution and processes of landform evolution.

GEO 4280C HYDROLOGY   (4)  
PR: GEO 3013, 3370 or CI. An in-depth study of the hydrologic cycle with emphasis on surface water components. Particular topics may include precipitation, evapotranspiration, water budget, streamflow, and probability analysis.

GEO 4340 MAN AND NATURAL HAZARDS   (4)  
An examination of environmental hazards; their influence on man and man's attempt to overcome them. Some of the topics considered are hurricanes, tornadoes, earthquakes, tidal waves, fire, freezes and droughts.

GEO 4372 CONSERVATION   (4)  
The distribution, exploitation, and conservation of physical and human resources, ecology.

GEO 4390 WATER RESOURCES   (4)  
A general overview of the hydrologic cycle and the impact of cultural development on its various components. May also include a survey of regional water problems.

GEO 4420 CULTURAL GEOGRAPHY   (4)  
A study of the temporal-spatial relationship of culture and nature. Emphasis is placed on man's role in using and modifying the landscape and the effect of his global distribution on his economic activities, political development, and cultural differentiation.

GEO 4440 POPULATION GEOGRAPHY   (4)  
An analysis of contemporary patterns in world and regional distributions of people and geographical factors underlying these patterns and their changes.

GEO 4460 HISTORICAL GEOGRAPHY   (4)  
Survey of evolving landscapes through time; analysis is made by means of systematic and regional methods in order to reconstruct the changing culture-nature equation.

GEO 4530 WATER RESOURCES   (4)  
The geographic factors underlying political decisions, those which influence the outcome of political decisions, and the geographic consequences of political decisions and actions.

GEO 4550 POLITICAL GEOGRAPHY   (4)  
Geopolitical relationships are examined at the local, state, national and supranational levels.

GEO 4570 ECONOMIC GEOGRAPHY   (4)  
Location factors and principles, utilizing theoretical and empirical studies. Focus upon the spatial organization of economic production, consumption, and exchange systems.

GEO 4580 GEOGRAPHY OF ENERGY   (4)  
An examination of the primary sources of energy from the standpoint of systematic and regional geography. Consideration is given to the resource base, production, and consumption. Special attention is given to OPEC and environmental problems.

GEO 4602 URBAN GEOGRAPHY   (4)  
Analysis of the spatial properties of urban areas. Emphasis is placed on factors of urban growth, location, spacing, and size; examined are the geographic factors supporting urban development, site, situation, the internal structure, the hinterland.

GEO 4700 TRANSPORTATION GEOGRAPHY   (4)  
Reciprocal relations between freight and passenger transportation and land use organization in terms of site requirements, traffic generation characteristics, circulation problem zones of production-fabrication-consumption.
GRADUATE COURSES

GEO 6948 GRADUATE INSTRUCTION METHODS (1-4)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

GEO 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

GERONTOLOGY

UNDERGRADUATE COURSES

GEO 3000 INTRODUCTION TO GERONTOLOGY (3)
This course is designed to be an introduction to the study of aging. The aging process is viewed from a multi-disciplinary perspective including the biological, psychological, and sociological aspects of aging.

GEO 3100 CULTURE, SOCIETY AND AGING (3)
This course is designed to allow the student to consider aging within the context of culture and society. Emphasis will be given to cultural attitudes toward aging in the U.S. and to implications of cultural attitudes toward aging in other societies.

GEO 3200 APPLIED GERONTOLOGY (3)
PR: CI. This course is designed to provide an integration of empirical data in the study of aging with practical experience in working with older people. Students will spend time actually working with older people in an agency or institutional setting and then will use experiences in conjunction with other available data to gain perspective in this field.

GEO 4900 DIRECTED READING (1-2)
PR: CI. A reading program with topics in gerontology conducted under the supervision of a faculty member.

GEO 4930 SEMINAR IN SELECTED TOPICS IN SOCIAL GERONTOLOGY (2)
PR: CI. This course will provide upper level students with a seminar experience in discussing topics of interest and social relevance in the field of aging. Each student will be required to prepare a seminar paper and present it.

GRADUATE COURSES

GEO 6195 SEMINAR IN ADVANCED REGIONAL GEOGRAPHY (3)
PR: Graduate standing in geography. Analytic study of a selected region of the world. May be repeated once for credit, but region may not be repeated.

GEO 6095 GEOGRAPHIC LITERATURE AND HISTORY (3)
PR: Senior or graduate standing in geography, or CI. The origins and development of the discipline as revealed through an examination of the principal written sources. Special attention paid to leading personalities and modern periodicals.

GEO 6119 SEMINAR IN ADVANCED TECHNIQUES & METHODOLOGY (3)
PR: Graduate standing in geography. Analytic study of a selected geographic technique (such as remote sensing, graphics, photo interpretation, or computer applications) or an investigation into an aspect of methodology. May be repeated once for credit but topic may not be repeated.

GEO 6209C SEMINAR IN ADVANCED PHYSICAL GEOGRAPHY (3)
PR: Graduate standing in geography. Analytic study of a problem selected from one or more aspects of the atmosphere, biosphere, hydrosphere, or lithosphere. May be repeated once for credit, but topic may not be repeated.

GEO 6428 SEMINAR IN ADVANCED CULTURAL GEOGRAPHY (3)
PR: Graduate standing in geography. Analytic study of a problem selected from one or more aspects of the cultural landscape (urban, political, economic, population, settlement). May be repeated once for credit.

GEO 6908 INDEPENDENT STUDY (var.)
Independent study in which the student must have a contract with an instructor. Repeatable. (S/U only.)

GEO 6918 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

GEO 6919 GRADUATE RESEARCH METHODS (1-4)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of four credits per student. (S/U only.)

GEO 6945 ACADEMIC METHODOLOGY (3)
PR: Graduate standing in geography. Current trends in college geography, with the emphasis on the junior college program. Not available to thesis students.

GEO 6947 DIRECTED TEACHING (1-6)
AMH 3130 THE AMERICAN REVOLUTIONARY ERA
Emphasis on the long and short term causes of the American revolution, the nature of Constitution-making, and the establishment of the federal system. Also examines the significance of loyalism, violence, and slavery in American society from 1750-1789.

AMH 3140 THE AGE OF JEFFERSON
A comprehensive study of American society and political culture from 1789-1828. Focuses on demographic trends, party systems, expansionism, Indian policy, labor, and ethnic-cultural conflicts.

AMH 3160 THE AGE OF JACKSON
The United States from 1828-1850, with emphasis on social and political conflict. Consideration of evangelicalism, reform, labor movements, urbanization, and political activity in the antebellum era.

AMH 3170 THE CIVIL WAR AND RECONSTRUCTION
An examination of the political, social, and economic climate of the 1850's that led to the American Civil War. The course does focus upon the war itself in its military, diplomatic, and political consequences through the end of the Reconstruction (1877).

AMH 3201 THE UNITED STATES, 1877-1929
A study of American society from the end of the Reconstruction to the stock market crash. Ranging over political, economic, social, intellectual and diplomatic developments, the course covers such topics as industrialization, reform, imperialism, feminism, race relations and World War I.

AMH 3252 THE UNITED STATES SINCE 1929
A study of the United States from the Great Depression to the present. Covering political, economic, social and diplomatic developments, the course examines such topics as the New Deal, World War II, the Cold War, Viet-Nam, the civil rights movement and Watergate.

AMH 3402 THE ORIGINS AND GROWTH OF THE AMERICAN SOUTH
A chronological study of the South in its relations with the rest of the United States focusing on the origins and development of Southern institutions and thought.

AMH 3403 THE SOUTH AND THE NATION
The growth of the "New South," and the increasing integration and assimilation of the South in the nation.

AMH 3420 FLORIDA HISTORY
A history of Florida from the period of Spanish and English discovery and colonization to the present day. Examines Florida as an area of European imperial conflict, the emergence of Florida within its regional setting, and its acquisition by the U.S. and subsequent political, economic and cultural growth.

AMH 3428 TAMPA HISTORY
A study of Tampa and its inhabitants, with emphasis upon the post-Civil War period. The course examines the origins of Tampa and the diverse social, political, and economic factors which have contributed to the emergence of Tampa as the center of a growing metropolitan area. The Tampa past will be studied against the state, national, and international developments.

AMH 3460 AMERICAN URBAN HISTORY
A study of American cities from the colonial period to the present. Through an examination of economic, political, social and physical developments, the course traces both the opportunities and problems presented by urban life.

AMH 3500 AMERICAN LABOR HISTORY
A study of American workers from the colonial period to the present. The course examines the changing nature of work, its effects on workers (including ethnic and racial minorities and women), and their responses as expressed in strikes, unions, and political action.

AMH 3510 U.S. DIPLOMATIC HISTORY TO 1898
The development of American Foreign Relations in the Agricultural era.

AMH 3511 U.S. DIPLOMATIC HISTORY IN THE 20TH CENTURY
A history of American Foreign Relations in the Industrial era.

AMH 3530 IMMIGRATION HISTORY
A study of the composition and character of the "American" people with emphasis on the period from 1840s to the 1920's. This
course examines the diverse old-world backgrounds of the thirty-five million immigrants and their individual and group responses to the new world's social, economic and political conditions.

**AMH 3540 UNITED STATES MILITARY HISTORY** (4)
A study of American military policy and practices from colonial days to the present. Attention is given both to tactics and to strategy in the unfolding formulation and development of American armed might.

**AND 3501 WAR AND AMERICAN EMPIRE** (4)
The U.S. evolved in 200 short years from 13 disunited colonies to the number one power in the world. To achieve this same reluctant goal we have utilized war repeatedly to achieve empire.

**ASH 3403 ANCIENT AND IMPERIAL CHINA** (4)
An historical survey of the foundation and flowering of Chinese civilization with primary emphasis on cultural, intellectual, and institutional elements, from the paleolithic period to the early Manchu Dynasty (17th century).

**ASH 3404 MODERN CHINA** (4)
Political, economic, and social history of China from the time of the first major Western contacts (17th-18th Centuries) through the consolidation of socialism in the late 1950's, and the Great Leap Forward.

**ASH 3501 HISTORY OF INDIA** (4)
A study of the major themes of Indian history from the Indus culture to the present. Emphasis will be given to the Classical, Mogul and British periods as well as the modern independent sub-continent.

**EIHU 2101, 2102 ANCIENT HISTORY I, II** (3,3)*
An introductory survey of ancient Near Eastern, Greek, and Roman history. EUH 2101 treats the ancient Near East and Greece, from the origins of civilization to the full development of the Hellenistic kingdoms prior to conflict with Rome. EUH 2102 deals with Rome through the Regal, Republican, and Imperial periods, from the beginnings of civilization in Italy to the division of the Roman Empire, A.D. 395.

**EIHU 2121, 2122 MEDIEVAL HISTORY I, II** (3,3)*
An introductory survey of the Middle Ages. EUH 2121 deals with the Christian civilization of Europe, circa 300-1050 A.D.; EUH 2122 treats the mature medieval civilization of Europe, circa 1050-1500.

**EIHU 2200, 2201 MODERN EUROPEAN HISTORY I, II** (3,3)*
A thematic survey of Europe in the modern age. EUH 2200 treats the period from the Renaissance to the French Revolution; EUH 2201, from the French Revolution to the present.

**EIHU 3142 RENAISSANCE AND REFORMATION** (4)*
A history of Europe from the beginnings of Renaissance humanism to the beginnings of the Thirty Years' War (1400-1618). The cultural, social, and economic characteristics of the period will provide the framework for artistic, philosophical, religious, and political developments.

**EIHU 3181 MEDIEVAL CULTURE** (4)*
A survey of thought, culture, and art in the Middle Ages. Medieval outlooks and attitudes as manifested in such topics as literature, art, philosophy, education, and religion; with emphasis upon Medieval man's changing perception of himself and his world.

**EIHU 3185 VIKING HISTORY** (4)*
The role of the Vikings in the shaping of Western history. A comprehensive survey of their institutions, outlook, and daily life. Viking expansion into Europe and North America.

**EIHU 3188 MEDIEVAL SOCIETY** (4)*
A study of the daily life and attitudes of the medieval nobleman, peasant, townsman, and the agrarian-urban economy and society which affected their lives.

**EIHU 3189 MEDIEVAL POLITICS** (4)*
An inquiry into the nature, distribution, and use of political power during the Middle Ages, in such institutions as feudalism, monarchy, cities, and the church.
EUH 3572 RUSSIAN HISTORY 1865 TO PRESENT (4)
An analysis of the transition from late imperial society to the contemporary Soviet system. Emphasis will be placed on continuity and change in the economic, political, and cultural aspects of Russia from 1865 to present.

HIS 3461 SCIENCE AND CIVILIZATION (4)
A thematic study of the interrelationship of science and society in modern history emphasizing the institutional forms, value structures, and social relations in science as they have developed from the scientific revolution to the present.

HIS 3930 SPECIAL TOPICS (3)
This course is designed to emphasize a selected historical problem or issue that is meaningful and challenging to the student. A variety of instructional approaches will be taken to the material. Topics will be changed each semester.

HIS 4152 THEORY OF HISTORY (4)
Recommended to be taken during the senior year. Required of all history majors. An analysis of the foundations of historical knowledge and historical methodology. Includes a survey of historical thinking and writing from ancient times to the present and an examination of contributions from other disciplines to the development of historical thought and practice.

HIS 4153 ORAL HISTORY (3)
A study of the craft and technique of Oral History. The course focuses on a number of historical studies which have utilized interviews as an instrument for historical research. Students will be expected to complete original field research, preferably in the Tampa area.

HIS 4900 DIRECTED READING (1-3)
PR: CI. Arrangement with instructor prior to registration. Readings in special topics.

HIS 4936 PRO-SEMINAR IN HISTORY (4)
PR: CI. Advanced topics in the various fields of History. Emphasis is placed on discussion of assigned readings and on research and writing of a major paper. One pro-seminar is required of all history majors. Non-majors may enroll with the consent of the instructor. Topics vary within each field. May be repeated up to 12 credit hours.

LAH 3021 SPAIN, PORTUGAL, AND IBERIAN EMPIRES (4)
A study of the peoples of the Iberian peninsula from the late medieval period to 1898. Emphasis falls on emergence of the Iberian states and the role of Spain and Portugal in the Age of Exploration and the early modern period.

LAH 3022 MODERN LATIN AMERICA (4)
A study of the emergence of the Latin American states. The course will examine developments in Latin American during the nineteenth and twentieth centuries. Special attention is given to the Third World character of the region.

LAH 3430 HISTORY OF MEXICO (4)
Mexican history from pre-Columbian cultures to the twentieth century. Emphasis falls on the colonial political economy, examination of colonial social developments, the wars of independence, the emergence and development of the Mexican state in the nineteenth century and the Mexican Revolution in the twentieth century.

LAH 3470 HISTORY OF THE CARIBBEAN (4)
A thematic study of the circum-Caribbean from pre-Columbian cultures to the twentieth century. Special attention is given to the development of the Caribbean political economy with emphasis on monoculture, plantation society, and colonial/neo-colonial relationships.

LAH 3480 HISTORY OF CUBA (4)
An examination of Cuban history from pre-Columbian cultures to the Cuban Revolution. Emphasis falls on a thematic study of Cuba, including conquest and colonization, the development of the sugar economy, the nineteenth-century struggles for independence, the political economy of the Republic, and the revolutionary processes of the twentieth century.

LAH 3600 HISTORY OF BRAZIL (4)
A study of Brazil from the sixteenth century to the present. Emphasis falls on the Portuguese conquest and settlement in America and the subsequent emergence of the Brazil empire and republic. Focus in the twentieth century is on Brazil's quest for modernity and bid for leadership in Latin America.

WOH 3270 REVOLUTIONS IN THE MODERN WORLD (4)
A comparative study of the major revolutions in world history. Emphasis is placed on the testing of various theories and models of the revolutionary process in the context of concrete historical examples.

WST 3210 WOMEN IN WESTERN CIVILIZATION I (4)
A survey of attitudes toward sex roles, female sexuality and the relation of gender to power, and the status of women compared to that of men, in the ancient Near East, ancient Greece, ancient Rome, Northern and Western Europe in the early Middle Ages. (Also offered under Women's Studies.)

WST 3220 WOMEN IN WESTERN CIVILIZATION II (4)
A survey of the differential impact of European history on women and men, and the status of various classes of women compared with that of men. Roles of women in the late Middle Ages, Renaissance/Reformation/witch trials, and in the economic, political, social and ideological upheavals as Europe moved into the modern period. (Also offered under Women's Studies.)

WST 4309 THE FEMALE EXPERIENCE IN AMERICA (4)
PR: WST 2010, or WST 2011, or CI. A study of the female experience in America based on newly-published diaries, letters, journals and writings by women of various classes, races, ethnic groups, and on the new data, methodology and research on American women by feminist historians. (Also offered under Women's Studies.)

WST 4310 FEMINISM IN AMERICA (4)
PR: WST 2010 or WST 2011 or CI. Emergence of the women's movement in the 19th century in response to the female experience in America: origins, new theoretical issues raised, practical applications. Sources, issues and implications of 20th century feminism in historical context; continuities and discontinuities with the earlier women's movement. (Also offered under Women's Studies.)

GRADUATE COURSES

HIS 6085 INTERNSHIP IN HISTORY (4)
PR: CI. Supervised field placement in a local agency involved in historical planning and preservation. Students will receive practical experience in the fields of archival management, architectural preservation, and state and local research. (S/U only.)

HIS 6112 ANALYSIS OF HISTORICAL KNOWLEDGE (4)
PR: Graduate standing. A study of History as a form of knowledge with emphasis on explanatory models and the relationship of social science theory to the problems of historical analysis.

HIS 6904 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

HIS 6908 INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

HIS 6920 COLLOQUIUM IN HISTORY (4)
A readings and discussion course organized around an in-depth examination of selected topics within the fields. Emphasis of the course is on the review of the historiographical, methodological, and interpretative advances as they affect the topics under study. Repeatable as topics vary.

HIS 6939 SEMINAR IN HISTORY (4)
Research in selected topics within the fields selected by the instructor. Repeatable as topics vary.

HIS 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

HUMAN SERVICES

UNDERGRADUATE COURSES

HUS 3010 INTRODUCTION TO HUMAN SERVICES (3)
An introduction to the field of human services. Study of the professions and agencies involved in providing human services. Analysis of the values and ethics of various professional associations.
HUS 3300 SOCIAL POLICY IN THE UNITED STATES (3)
PR: HUS 3010 or CI. Historical development of social policy in the United States. The impact of industrialization and urbanization on the individual and family. The changing roles of family, community, state, and nation. Analysis of current issues.

HUS 4020 THE LIFE CYCLE (4)
An examination of individuals as they move through the various stages of the life-cycle—from birth until death. Attention is given to the physiological and psychosocial changes which occur during infancy, childhood, adolescence, young adulthood, middle age, old age, etc. Identification of major needs of individuals at different stages of life cycle.

HUS 4500 PLANNING AND EVALUATION OF HUMAN SERVICES PROGRAMS (3)
PR: HUS 3010 or CI. Review of approaches to planning, coordination, and evaluation of human services programs. Methods of determining efficiency and effectiveness of health, rehabilitation, welfare and community action programs. Application of planning and evaluation techniques to human services fields.

MHT 4302 INTERVIEWING (3)
PR: HUS 3010 or CI. The principles and techniques of interviewing. Use of interviewing in information gathering, research and helping relationships. Attention given to developing skills in communication across cultural, social, economic and age barriers.

SOW 4332 COMMUNITY ORGANIZATION AND DEVELOPMENT (3)
PR: HUS 3010 or CI. An interdisciplinary approach to community organization and development. A synthesis of social, cultural, psychological, economic, and political information concerning community structure and change. Approaches to the introduction of community change.

GRADUATE COURSES

HUS 5224 INTERVENTION TECHNIQUES (3)
PR: HUS 3010 or CI. Attention will be given to techniques of intervention at individual, small group, and community levels. The need for crisis intervention program in modern society.

INTERNATIONAL STUDIES

UNDERGRADUATE COURSES

AREA STUDIES
The following five courses (AFS 3930, ASN 3000, ASN 3030, EUS 3000, and LAS 3001), dealing with one or more countries of a given region, will select and emphasize subject matter from the following topics: its history, its people and their cultures, its social psychology and national characteristics, its resources, its economic and industrial characteristics, its literature, religion, and dominant values, its political framework and outlook, its social structure, and its current problems. Each course may be repeated when countries of concentration vary, but the same country may not be repeated for credit.

AFS 3930 AFRICA (3)
ASN 3000 ASIA (3)
ASN 3030 THE MIDDLE EAST (3)
EUS 3000 EUROPE (3)
LAS 3001 LATIN AMERICA (3)
ASN 3012 JAPAN TODAY (3)

AN introduction to modern Japan and its world role, drawing upon insights provided by the social and behavioral sciences. Emphasis is placed upon Japan's foreign relations.

ASN 3014 CHINA TODAY (3)

Using a multi-disciplinary approach to study China's nation-building efforts, foreign relations, social system, and culture, the course is intended to provide a basic understanding of contemporary China, (1949-present). Major topics include Maoism, Sino-American and Sino-Soviet relations, and China's economic development.

EUS 3022 RUSSIA TODAY (3)
An interdisciplinary approach to understanding Russian life and the makeup of the Soviet citizen today, including the impact of these elements on the current and prospective role of the Soviet Union in world affairs.

INR 2085 WORLD TENSIONS (2)
A study of the major causes and consequences of critical tensions which lead to serious social disturbances between and within the independent states of the world. The analysis covers tensions which are usually relieved by peaceful means and those which often lead to internal and external violence between states and/or other organized groups.

INR 3141 INTERNATIONAL NUCLEAR POLICY (3)
A study of the role and impact of nuclear issues in contemporary international politics. Topics will include, among others, the development of nuclear weapons systems, strategic nuclear policy, nuclear arms control efforts, nuclear proliferation, and nuclear war.

INR 3336 INTELLIGENCE AND U.S. FOREIGN POLICY (3)
An examination of the role of intelligence and the intelligence community in U.S. Foreign policy, with emphasis on the period since World War II. The organization and roles of U.S. intelligence agencies, (CIA, DIA, NSA, and the military intelligence branches), are described. Also presented are the recent history of U.S. covert action abroad and a case study of intelligence as it related to U.S. involvement in the Vietnam conflict.

INR 3503 THE UNITED NATIONS AND PEACE (3)
Study and analysis of the origin, evolution and possible future of the United Nations Organization. After a general survey of major trends in international law leading to the reinforcement of the concept of peaceful settlement of disputes, the League of Nations is studied as a transition to a better structure of international society. Emphasis is put on the principle of sovereignty with regard to the applicability of U.S. resolutions. With 51 members at its creation in 1945 and possibly 150 in the fall of 1978, the U.N. is the best mirror of the dramatic change in international relations. The course uses major issues, such as decolonization, disarmament, and international economic cooperation to illustrate the role of the U.N. as "a harmonizing forum" for conflicting political and ideological systems.

INR 4083 READINGS SEMINAR IN SINO-SOVET RELATIONS (3)
A readings seminar on the origin, development, present status, and future possibilities of the Sino-Soviet relations, focusing on the period 1956 to present, i.e., the Sino-Soviet dispute. Political, economic, ideological, and security factors are considered. In addition to the bilateral relationship between Russia and China, the broader international ramifications are also dealt with.

SSI 1211 WORLD PERSPECTIVE (3)
Application of the interdisciplinary approach to the study of the international system, major world regions and problems.

SSI 2261 WORLD IDEOLOGIES (3)
A course which details and examines the ideologies of today's independent countries. These are analyzed in their political, social, cultural, and historical context.

SSI 3128 ENERGY AND FOREIGN POLICY (3)
This course consists of an inquiry into the past, present, and future interdependent roles of energy (especially petroleum) policy and foreign policy, with interdisciplinary emphasis considering and integrating political, economic, social, cultural, and military aspects of the subject area.

SSI 3221 AMERICA'S ROLE IN THE WORLD (3)
Application of the interdisciplinary approach to the study of America's relations with other nations through analysis of political, socio-economic, cultural, and military problems, conflicting national interests, and the formulation of foreign policy and its implementation.

SSI 3412 INTERNATIONAL TERRORISM (3)
The study of international terrorism as a social phenomenon of the contemporary world which is increasingly attractive to individuals and groups associating themselves with various causes ranging from national liberation movements to networks of philosophical anarchists.
SSI 3260 COMMUNISM IN THE MODERN WORLD (3)
An interdisciplinary approach to the nature of Communism, its
philosophic bases, its anti-religious bias, its economic, social and
political theories and practices, the arts and sciences under
Communist ideology, its conduct of foreign affairs and
associated programs and techniques. Emphasis will be on Soviet
and Chinese communism.

SSI 3770 COMPARATIVE MILITARY SYSTEMS (3)
Using a comparative international approach, the course explores
ways in which military institutions interact with politics, societies
and economies. It also compares internal military organizational
modes. The course does not deal with military capabilities or
strategy.

SSI 3930 SELECTED TOPICS IN THE SOCIAL
SCIENCES (1-4)
Course content depends on student demand and instructors
interest. Topics will have clear interdisciplinary nature. Course
may be repeated as topics vary, but the same topic may not be
repeated.

SSI 3955 OVERSEAS STUDY (1-6)
A program of individual or group research in a foreign country.
Selection of the student, his preparation for the study, and
subsequent evaluation to be supervised by a faculty committee.

SSI 4250 THE EMERGING NATIONS (3)
PR: Upper division standing or CI. This course examines the
processes and problems involved when an underdeveloped
country seeks to develop a modern industrial civilization.

SSI 4900 DIRECTED READINGS (1-3)
PR: CI plus upper division standing. May be repeated. To
provide advanced students with intensive reading of interdiscipli­
nary nature in areas of specific interest.

SSI 4910 DIRECTED RESEARCH (1-3)
PR: CI plus upper division standing. May be repeated. To
provide advanced students with interdisciplinary research
experience in areas of specific interest.

SSI 4936 SENIOR SEMINAR (3)
PR: Senior standing and CI. To provide an integrating seminar
experience for International Studies' majors.

WST 3275 WOMEN IN THE DEVELOPING WORLD (3)
This course surveys the status of women in Asia, Africa, Latin
and Caribbean America as compared to the USA, Canada, West
Europe, and Marxist-Leninist countries. (Also offered under
Women's Studies.)

OFF-CAMPUS TERM

UNDERGRADUATE COURSES

IDS 4900 DIRECTED READINGS (1-4)
PR: OCT Program approval. Open to all students approved for
OCT Program. Provides students with community related
readings in areas of specific interest. May be repeated up to 8
credit hours.

IDS 4910 DIRECTED RESEARCH (1-4)
PR: OCT Program approval. To provide students with community
related research experience in areas of specific interest.
May be repeated up to 8 credit hours.

IDS 4942 OFF CAMPUS TERM SOCIAL ACTION
PROJECT (1-4)
PR: OCT Program approval. May be repeated up to 4 credit
hours. (S/U only.)

IDS 4943 OFF CAMPUS TERM SPECIAL PROJECT (1-2)
(S/U only.)

IDS 4953 OFF CAMPUS TERM INTERNATIONAL
PROGRAM (1-2)
(S/U only.)

POLITICAL SCIENCE

UNDERGRADUATE COURSES

CPO 3002 INTRODUCTION TO COMPARATIVE
POLITICS (4)
Introduction to comparative politics and analysis of representa­
tive European and non-Western political systems.

CPO 4034 POLITICS OF THE DEVELOPING AREAS (4)
An analysis of the ideologies, governmental structures, and
political predecessors of selected nations of the non-Western world.

CPO 4930 COMPARATIVE GOVERNMENT AND POLITICS
OF SELECTED COUNTRIES OR AREAS (4)
Studies a single political system or several political systems with
association elements of structure, process, domestic and foreign
politics, and regional roles are considered. May be repeated up to
12 credit hours as topics vary. Open to majors and non-majors.

INR 3002 INTRODUCTION TO INTERNATIONAL
RELATIONS (4)
Survey of international relations. Concepts and analytical tools
applied to events in the system, such as politics among nations,
control of national foreign policies, types of actors, war and
peace, sovereignty and diplomacy.

INR 3102 AMERICAN FOREIGN POLICY (4)
Analysis of the development and scope of United States foreign
policy, emphasizing goals and objectives, policy formulation and
implementation, themes and issues.

INR 4334 DEFENSE POLICY (4)
Analytic institutional factors contributing to formulation of
defense policy and the impact of such policy on international
relations.

INR 4803 INTERNATIONAL LAW (4)
Examines essential components of the international legal system:
recognition; succession; sea, air and space law; treaties,
diplomats, International Court of Justice; laws of war, etc.
Introduces the student to legal reasoning as employed in the
international context.

INR 4502 INTERNATIONAL ORGANIZATIONS (4)
Study of the operations of international organizations, their
structure, and their effects on world politics. The background
achievement, and organizational problems of the UN and
associated agencies are considered. In addition, other organiza­
tions in the international system, such as regional organizations
and multi-national corporations, are considered.

PAD 3003 INTRODUCTION TO PUBLIC
ADMINISTRATION (4)
A comprehensive examination of the field of public administra­
tion including the areas of organizational behavior and change,
the policy process, and the topics of public management,
financial administration, and personnel management. These
subjects are examined from the perspective of public and social
delivery.

PAD 4204 PUBLIC FINANCIAL ADMINISTRATION (4)
Analysis of problems in the growth and development of public
budgetary theory. Federal budgetary innovations will be focused
on.

POS 2041 AMERICAN NATIONAL GOVERNMENT (3)
Analysis of basic principles and procedures of the American
governmental system with emphasis on current issues and trends.

POS 2112 STATE AND LOCAL GOVERNMENT AND
POLITICS (3)
Analysis of the structure and function of state and local
governments, of the social and political influences that shape
them, and of the dynamics of their administrative processes.

POS 3142 INTRODUCTION TO URBAN POLITICS
AND GOVERNMENT (4)
An introduction to governmental and political structures and
processes as they function in urban areas, with special focus on
municipalities and locally based public services. Open to majors
and non-majors.

POS 3145 GOVERNING METROPOLITAN AREAS (4)
Examines the full range of governmental units and interactions
in metropolitan areas, and proposals for changes in metropolitan
governance. Focuses on some policy areas that are of area-wide
concern such as human services. Open to majors and non-
majors.

POS 3173 SOUTHERN POLITICS (4)
Examines changes in electoral politics in the South, and the role
of interest groups and the state and federal government in
facilitating change.

POS 3182 FLORIDA POLITICS AND GOVERNMENT (4)
A study of Florida political culture, political parties and
elections, the legislative, executive, and judicial systems, and policy patterns. Open to majors and non-majors.

POS 3273 PRACTICAL POLITICS (4)
PR: POS 2041 or POS 3453 or CI. Coordinated scholarly and practical activity through class lecture and supervised experience in field work in local political parties and election campaigns. Open to majors and non-majors.

POS 3285 JUDICIAL PROCESS AND POLITICS (4)
The focus of this course will be two-fold: (1) Studies in the organization, development, and mechanical functioning of American court systems (traditional approach); (2) studies of the causes and consequences of judicial behavior from an empirical perspective (behavioralist approach).

POS 3453 POLITICAL PARTIES AND INTEREST GROUPS (4)
Analysis and understanding of role, functions, structure, and composition of political parties and interest groups and their impact in American governmental institutions.

POS 3691 INTRODUCTION TO LAW AND POLITICS (4)
Survey of important aspects of the study of law in political science: nature of law, the legal process, relationship to political life of constitutional law, administrative law, the judicial process, and private law. Open to majors and non-majors.

POS 3713 EMPIRICAL POLITICAL ANALYSIS (4)
An introduction to the fundamentals of empirical political inquiry. Methods of systematic data collection and quantitative analysis techniques are emphasized. Laboratory exercises using the computer are required.

POS 4165 COMMUNITY LEADERS AND POLITICS (4)
Analysis of the roles and powers of mayors, city managers, council members, and interest groups in the local government. The distribution of community power and the role of ethnic groups is also examined. Open to majors and non-majors.

POS 4284 POLITICAL BEHAVIOR, PUBLIC OPINION, AND ELECTIONS (4)
Analysis of economic and socio-psychological factors influencing mass and elite political behavior with special emphasis on voting behavior, public opinion, and political activism.

POS 4413 THE AMERICAN PRESIDENCY (4)
Examination of the presidency as a political institution. Analysis of constitutional, statutory, and informal powers; legislative, administrative, political, and foreign policy leadership; crisis management and presidential decision-making; White House staffing; limits on power.

POS 4424 THE AMERICAN CONGRESS (4)
Analyses of the American Congress: organization, procedures, committee system, party leadership, relations with governmental and non-governmental organizations and agencies, oversight, decision-making processes, House/Senate comparisons.

POS 4614 CONSTITUTIONAL LAW I (4)
PR: POS 2041. Examination of the underlying philosophy of the American Constitution, its relationship to leading social problems, its principle institutions, their legal relationships to one another, and the scope of constitutional powers. Analysis of Supreme Court decisions, scholarly commentaries, and the writing of leading public figures on constitutional issues from the founding of the Republic to the present.

POS 4624 CONSTITUTIONAL LAW II (4)
PR: POS 2041. Analysis of Supreme Court decisions and scholarly commentaries on the constitutional rights of individuals, including property rights, rights of the accused, minority rights, freedom of expression, and the right to privacy. (Also offered under Women's Studies.)

POS 4693 WOMEN AND THE LAW (4)
Issues concerning the legal aspects of sex and sex-based discrimination as embodied in statutory and case law. Open to majors and non-majors. (Also offered under Women's Studies.)

POS 4905 INDEPENDENT STUDY (1-4)
PR: 3.0 average in Political Science. Specialized independent study determined by the student's needs and interests and with CI. (S/U only.)

POS 4910 INDIVIDUAL RESEARCH (1-6)
PR: 3.0 average in Political Science and CI. Investigation of some aspect of political science culminating in the preparation of an original research paper.

POS 4936 SENIOR SEMINAR (4)
PR: Senior standing and CI. Gives the student an opportunity to work with others in a seminar format in exploring specialized topics in political science. Emphasis on student participation through papers, seminar reports, and active class discussion.

POS 4941 FIELD WORK (4)
PR: 3.0 average in Political Science and CI. Opportunity for students to obtain practical experience, knowledge and understanding of local government, politics and administration by becoming involved as research and administrative aides to agencies and institutions of local government.

POS 4970 HONOR THESIS (4)
PR: Admission to Honor option. Writing of honor thesis under direction of faculty members.

POT 3003 INTRODUCTION TO POLITICAL THEORY (4)
Course examines various kinds of theory used by political science for understanding political life. Discussion of such theoretical types as normative theory, empirical theory, historicist theory, analytical theory, and critical theory. Open to majors and non-majors with upper-class standing.

POT 3013 CLASSICAL POLITICAL THEORY (4)
Analysis of basic ideas of Plato, Aristotle, Cicero, St. Thomas, and other leading pre-modern political philosophers.

POT 4054 MODERN POLITICAL THEORY (4)
Analysis of basic political ideas of Machiavelli, Hobbes, Locke, Rousseau, Burke, and other modern philosophers.

POT 4064 CONTEMPORARY POLITICAL THOUGHT (4)
Course examines various political views and political phenomena in the nineteenth and twentieth centuries. In addition to discussion of diverse theoretical types (e.g., historicist theory, empiricist theory, critical theory), salient political phenomena will also be presented. Open to majors and non-majors.

POT 4204 AMERICAN POLITICAL THOUGHT (4)
Examines political writings in the U.S. and responses to critical periods in history, beginning with the Founding and culminating in recent contributions and understanding contemporary political problems and solutions.

PUP 4534 HOUSING AND GOVERNMENT (4)
Examines the role of federal, state, and local government in the formulation and implementation of housing policy. Analyzes the political aspects of housing policy formation and the administrative aspects of the housing delivery system. Open to majors and non-majors.

URP 4050 CITY PLANNING AND COMMUNITY DEVELOPMENT (4)
An introduction to the development, role and components of city planning in local government and to the potential and actual policies of state and local government in attempting to regulate or control urbanization. Open to majors and non-majors.

GRADUATE COURSES

CPO 5934 SELECTED TOPICS IN COMPARATIVE POLITICS (4)
Studies specific substantive areas in comparative politics such as political economy or the politics of specific countries or regions. May be repeated for credit as topics vary.

CPO 6007 SEMINAR IN COMPARATIVE POLITICS (4)
Extensive examination of the major theories and approaches used in the study of comparative politics. Seminar format.

CPO 6036 POLITICS OF DEVELOPING AREAS (4)
Advanced study of ideologies, politics, political institutions, and the socio-economic conditions that influence them in developing nations.

INR 5086 ISSUES IN INTERNATIONAL RELATIONS (4)
Selected problems and issues in international relations. Explores specific topics related to the study of international relations and gives the student the opportunity for an in-depth study of historical and contemporary problems in international politics. May be repeated for credit as topics vary.

INR 6007 SEMINAR IN INTERNATIONAL RELATIONS (4)
Advanced study of international relations, including survey of
basic literature, analysis of numerous theoretical and methodological approaches, and analysis of major issues.

**INR 6107 AMERICAN FOREIGN POLICY (4)**
Analysis and evaluation of American foreign policy with emphasis on substance and process: goals and objectives of American foreign policy, formulation and execution of foreign policy, critical issues and problems confronting the United States in its relations abroad. Study of various conceptual, methodological, and theoretical approaches.

**PAD 5035 ISSUES IN PUBLIC ADMINISTRATION AND PUBLIC POLICY (4)**
Selected issues and topics in Public Administration and Public Policy. May be repeated for credit as topics vary.

**PAD 5333 CONCEPTS AND ISSUES IN PUBLIC PLANNING (4)**
PR: URP 4050 or URP 6056. Analysis of basic concepts, issues, and strategies of planning in the public sector and the various important processes involved, such as policy determination, collection of information, decision making, and other organizational and political processes.

**PAD 5417 PUBLIC PERSONNEL ADMINISTRATION (4)**
A study of the major functions in public personnel, including recruiting, selection, testing, training, and development, and employee and human relations in the public service.

**PAD 5605 ADMINISTRATIVE LAW (4)**
An examination of the constitutional and statutory bases and limitations of the administrative process, administrative adjudication, rule making, and the judicial review of such actions.

**PAD 5612 ADMINISTRATIVE REGULATION (4)**
An analysis of the regulatory functions and processes in the American political system. The regulatory commissions, their functions, powers, management, and their relations with other branches of government are covered. An examination of various efforts to reform and change the regulatory process is made.

**PAD 5807 ADMINISTRATION OF URBAN AFFAIRS (4)**
An analysis of the role of the administrator at the municipal level stressing the division functions, policy formation, alternative governmental structures and their effect on administrative processes.

**PAD 5836 COMPARATIVE PUBLIC ADMINISTRATION (4)**
Study of how organizations and managers perform within a particular environment, potential impact of innovation, recognition of innovations which may be applicable overseas, how service is accomplished in a variety of socio-economic environments.

**PAD 6037 BUREAUCRACY AND PUBLIC POLICY (4)**
Analysis of the formal, informal, and societal characteristics of public bureaucracies. A study of the implementation of public policy by bureaucratic agencies.

**PAD 6060 SEMINAR IN PUBLIC ADMINISTRATION (4)**
Examination of major theoretical and practical developments in public administration with focus on organization theory and current research trends in the field.

**PAD 6105 SEMINAR IN PUBLIC ORGANIZATIONAL CHANGE (4)**
Introduce the student to the problems, strategies, and methodology of changing public organizations. Includes organizational diagnosis, strategies of change, and evaluation applicable to work situations in the public sector.

**PAD 6207 PUBLIC FINANCIAL ADMINISTRATION (4)**
An examination of the fiscal organization of federal, state, and local governments. Current problems in budgeting, revenue and indebtedness are considered.

**PAD 6228 STATE AND LOCAL BUDGETING (4)**
An examination of the budgetary systems and practices of state and local governments with emphasis on preparation, authorization, execution and control.

**PAD 6306 URBAN POLICY ANALYSIS (4)**
Systematic examination of the organizational and administrative characteristics of planning, program development, reporting and evaluation activities at local levels by state, regional, and other agencies. Emphasis will be on building evaluation designs that are feasible and practical at the local level.

**PAD 6327 SEMINAR IN PROGRAM EVALUATION (4)**
A focus on program cycle-planning, development, implementation and evaluation, needs assessment, and goal setting. Methods for designing alternative program structures, and linking programs to budget/ personnel requirements and grant writing will be covered.

**POS 5094 ISSUES IN AMERICAN NATIONAL AND STATE GOVERNMENT (4)**
Selected issues and topics in American national and state government. May be repeated for credit as topics vary.

**POS 5155 ISSUES IN URBAN GOVERNMENT AND POLITICS (4)**
Selected issues and topics in Urban Government and politics. May be repeated for credit as topics vary.

**POS 5734 POLITICAL RESEARCH METHODS (4)**
A survey of methods, problems, and issues in political research and analysis for the advanced Political Science student; formulating research problems, research design, data collection, and analysis are emphasized.

**POS 5764 COMPUTER APPLICATIONS IN POLITICAL SCIENCE (4)**
An introduction to the application of computers to the study of politics. The student will be introduced to the use of modern computers as a research tool with several types of applications. Topics include: digital computers, statistical packages, simulation, computerized content analysis, and introductory programming applications. This course has a computer lab component.

**POS 6045 SEMINAR IN AMERICAN GOVERNMENT AND POLITICS (4)**
Advanced study of the institutions and processes of American national government and politics.

**POS 6095 SEMINAR IN INTERGOVERNMENTAL RELATIONS (4)**
Advanced study of the interaction between the various levels of government: national, state, and local. Interlocal processes and questions of metropolitan governance are one concern. State and federal grants-in-aid, and their use for policy coordination will also be emphasized.

**POS 6127 ISSUES IN STATE GOVERNMENT AND POLITICS (4)**
Advanced study of selected topics in institutions, processes, and behavior of American state governments and Florida government. May be repeated as topics vary.

**POS 6157 SEMINAR IN URBAN GOVERNMENT AND POLITICS (4)**
Analysis of the literature in urban government and politics, with special emphasis on urban political behavior and the development of various theories and propositions regarding governmental structure and the formation and implementation of public policy.

**POS 6237 ISSUES IN POLITICAL BEHAVIOR AND SOCIALIZATION (4)**
Advanced study of selected topics in political behavior and socialization, including participation and activism, voting, public opinion, and leadership. May be repeated as topics vary.

**POS 6415 THE AMERICAN PRESIDENCY (4)**
Analysis of problems and powers of the modern Presidency with emphasis on crisis management, staffin, legislative leadership, and decision making.

**POS 6427 THE LEGISLATIVE PROCESS (4)**
Analysis of formal and informal decision-making processes in legislative bodies, with emphasis on U.S. House of Representatives and U.S. Senate. Executive-legislative conflict and cooperation; input/output analysis.

**POS 6455 POLITICAL PARTIES AND INTEREST GROUPS (4)**
Analysis of status, functions, and characteristics of political parties and interest groups as well as their interactions with political processes, actors, and institutions.

**POS 6607 CONSTITUTIONAL LAW (4)**
PR: Graduate standing or consent of instructor. Advanced study of legal, political, philosophic and methodological problems in constitutional law.
The study of the evolution of behavior similarities, and differences in capacities for environmental adjustment and for behavioral organization among the important types of living beings from plants and unicellular organisms to the primates and human.

CLP 3003 PSYCHOLOGY OF ADJUSTMENT (3)
Genetic, organic, and learned factors involved in the processes of personal adjustment: applications for mental health principles to everyday living. Not for major credit.

CLP 4143 ABNORMAL PSYCHOLOGY (3)

CLP 4433 PSYCHOLOGICAL ASSESSMENT (3)
PR: PSY 2012, PSY 3013, PSY 3213. A consideration of the instruments for intellectual and personality assessment including their applications, development, and potential abuses. Students may not receive credit for both CLP 4433 and EDF 3430. Introduction to Measurement and Evaluation.

DEP 3103 CHILD PSYCHOLOGY (3)
Developmental and psychosocial aspects of childhood, including hereditary, maturational, psychological, and social determinants of child behavior. Not for major credit.

DEP 4005 DEVELOPMENTAL PSYCHOLOGY (3)

EXP 4204C PERCEPTION (3)
PR: PSY 2102, PSY 3013, PSY 3213. How man perceives his environment. Topics include sensory basis of perception, physical correlates of perceptual phenomena, and the effects of individual and social factors on perception. Primary emphasis on vision and audition. Lec.-lab.

EXP 4304 MOTIVATION (3)
PR: EXP 4404, PSY 2012, PSY 3013, PSY 3213. An examination of human and animal motivations from both physiological and psychological viewpoints.

EXP 4404 PSYCHOLOGY OF LEARNING (3)

EXP 4523C HUMAN MEMORY (3)
PR: PSY 2012, PSY 3013, PSY 3213. Survey of methods, empirical findings, and theoretical interpretations of human learning and retention, including concept learning, information processing, and verbal learning. Lec.-lab.

INF 3101 APPLIED PSYCHOLOGY (3)
The application of psychological principles and the functions of psychologist in education, government, industry, and clinical practice.

INF 4004 INDUSTRIAL PSYCHOLOGY (3)
PR: PSY 2012, PSY 3013, PSY 3213. Applications of psychological principles to industry. Topics include: selection and placement, testing, criterion development, performance appraisal, training, motivation, job attitudes and satisfaction, supervision, decision-making, organizational structure and theory, accidents and safety, human engineering.

PPS 4004 PERSONALITY (3)
PR: PSY 2012, PSY 3013, PSY 3213. Methods and findings of personality theories and an evaluation of constitutional, biosocial, and psychological determinants of personality.

PSB 4013C NEUROPSYCHOLOGY (3)

PSY 2012 AN INTRODUCTION TO CONTEMPORARY PSYCHOLOGY (3)
Designed as an introductory course in psychology for both majors and non-majors. A broad survey of contemporary psychology with special emphasis on the more applied areas of psychology (e.g., social psychology, clinical psychology, industrial psychology).
GRADUATE COURSES

CLP 6166 PSYCHOPATHOLOGY (3)
PR: Admission to M.A. program in psychology or CI. Exploration of current approaches to the understanding of pathological behavior and implications for theories of personality. A survey of treatment methods is included. M.A. core course.

CLP 6438 PSYCHOLOGICAL ASSESSMENT (3)
PR: CI. Courses cover theory, research, and applications of psychological assessment in areas such as interviewing, intellectual and cognitive functioning, neuropsychodiagnostics, and personality testing. May be repeated for credit with different subject matter.

CLP 6477 BEHAVIORAL DISORDERS OF CHILDREN (3)
PR: CI. Causative factors in behavior deviations common to children and adolescents. Thorough study of selected childhood mental disorders and a survey of ameliorative techniques for treating childhood behavior difficulties.

CLP 6937 TOPICS IN CLINICAL-COMMUNITY PSYCHOLOGY (3)
PR: CI. Courses on topics such as humanistic psychology, community psychology, and clinical neuropsychology. May be repeated for credit with different subject matter.

CLP 7188 PSYCHOTHERAPY AND BEHAVIOR CHANGE (3)
PR: Admission to graduate degree program in psychology and CI. Courses to cover the theoretical, empirical, and applied foundations of various systems of psychotherapy. Traditional relationship therapy, client-centered approaches, operant techniques, group psychotherapy, and other varieties of therapeutic intervention. May be repeated for credit with different subject matter.

CLP 7379 GRADUATE SEMINAR IN CLINICAL-COMMUNITY PSYCHOLOGY (1-3)
PR: CI. Seminars on topics such as psychopathology, community psychology, clinical issues, personality, and developmental psychology. May be repeated for credit with different subject matter.

DEP 6058 DEVELOPMENTAL PSYCHOLOGY (3)
PR: Admission to M.A. program in psychology or CI. Detailed study of the development of human and animal behavior aimed toward an understanding of ontogenetic contributions to later behaviors. Effects of early experience on later behavior. M.A. core course.

EXP 6208 PERCEPTION (3)
PR: Admission to M.A. program in psychology or CI. Current data and theory of perceptual processes. Consideration of physiological and psychological variables in perception, and applications of information theory and signal detection theory. M.A. core course.

EXP 6307 MOTIVATION AND EMOTION (3)
PR: CI. A detailed examination of human motivation and emotion from both the physiological and psychological viewpoints. M.A. core course.

EXP 6406 LEARNING (3)
PR: Admission to M.A. program in psychology or CI. Habituation, sensitization, classical and instructional conditioning, generalization, discrimination, trial and error learning, problem solving. M.A. core course.

EXP 6526 HUMAN MEMORY (3)
PR: Admission to M.A. program in psychology or CI. Review of methods, findings, and theoretical interpretations associated with the study of acquisition and retention of information. M.A. core course.

EXP 7140 TOPICS IN EXPERIMENTAL PSYCHOLOGY (3)
PR: CI. Courses on topics such as operant behavior, electrophysiological methods, psychophysiology, and memory. May be repeated for credit with different subject matter.

EXP 7099 GRADUATE SEMINAR IN EXPERIMENTAL PSYCHOLOGY (1-3)
PR: CI. Seminars on topics such as learning, perception, physiological psychology, cognitive processes, and quantitative methods. May be repeated for credit with different subject matter.
INP 6056 INDUSTRIAL PSYCHOLOGY (3)
PR: Admission to M.A. program in psychology or Cl. An introduction to the major areas of Industrial-Organizational Psychology including the topics of selection and placement, training, criterion development and performance appraisal, job satisfaction and motivation, and organizational theory and structure. M.A. core course.

INP 6935 TOPICS IN INDUSTRIAL-ORGANIZATIONAL PSYCHOLOGY (3)
PR: Cl. Courses on topics such as industrial psychology, testing in industry, human factors psychology, and training in industry. May be repeated for credit with different subject matter.

INP 7097 GRADUATE SEMINAR IN INDUSTRIAL-ORGANIZATIONAL PSYCHOLOGY (1-3)
PR: Cl. Seminars on topics such as industrial psychology, evaluation of performance in industry, and human factors. May be repeated for credit with different subject matter.

PPE 6058 PERSONALITY
PR: Admission to M.A. program in psychology or Cl. Neural and traditional and current theory and research in the area of personality. M.A. core course.

PSY 6056 PHYSIOLOGICAL PSYCHOLOGY (3)
PR: Admission to M.A. program in psychology or Cl. Neural and physiological foundations of behavior. Structure and function of the central nervous system. Physiological basis of learning, motivation in subhumans and humans. M.A. core course.

PSY 6217 RESEARCH METHODS AND MEASUREMENT (4)
PR: Admission to graduate degree program in psychology or Cl. Courses designed to cover research methods and strategies and their application to psychology. Topics include logic and purpose of experimentation in psychology, measurement theory, design and analysis of variance, correlational methods, interpretation of experimental findings. M.A. core course. May be repeated for credit with different subject matter.

PSY 6218 GRADUATE RESEARCH METHODS (1-3)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

PSY 6907 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

PSY 6917 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

PSY 6946 PRACTICUM AND INTERNSHIP IN CLINICAL PSYCHOLOGY (1-15)
PR: Cl. Supervised training in community and university settings in the application of psychology. May be repeated for credit.

PSY 6947 GRADUATE INSTRUCTION METHODS (1-3)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

PSY 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

PSY 7908 DIRECTED READINGS IN PSYCHOLOGY (1-15)
PR: Cl. An advanced reading program of selected topics in Psychology under the supervision of a psychology faculty member. The reading program is designed to meet the individual requirements and interest of graduate students in Psychology, with selected topics chosen by the student in close collaboration with a faculty member. May be repeated for credit.

PSY 7918 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

PSY 7931 SEMINAR IN ETHICS AND PROFESSIONAL PROBLEMS (3)
PR: Second year in Ph.D. program in psychology or Cl. Ethical issues and professional problems in the practice of psychology.

PSY 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

SOP 6059 SOCIAL PSYCHOLOGY (3)
PR: Admission to M.A. program in psychology or Cl. Overview of theory and research in social psychology. Attitudes, values, group processes, leadership, conformity, social learning and motivation. M.A. core course.

SOP 6669 TOPICS IN SOCIAL-ORGANIZATIONAL PSYCHOLOGY (3)
PR: Cl. Courses on topics such as experimental social psychology, organizational psychology, attitudes, and group process. May be repeated for credit with different subject matter.

SOP 7609 GRADUATE SEMINAR IN SOCIAL-ORGANIZATIONAL PSYCHOLOGY (1-3)
PR: Cl. Seminars on topics such as social psychology, scientific communication, and decision making. May be repeated for credit with different subject matter.

REHABILITATION COUNSELING

EGC 5065 REHABILITATION: CONCEPTS AND THEORETICAL ISSUES (4)
A look at the historical origin, development, and current understanding of the philosophy of rehabilitation. The rehabilitation process is viewed as an integration of concepts and procedures from the medical, social-psychological, and legal disciplines.

EGC 5376 MEDICAL ASPECTS OF DISABILITY (4)
Study of medical information needed by the counselor integrating medical services into the total rehabilitation process from referral to placement. Examines the effect of a client's physical condition on various areas of adjustment. Includes appraisal of physical capacities in terms of functional limitations and individual differences.

EGC 5493 SEMINAR IN PRINCIPLES AND PRACTICES OF REHABILITATION COUNSELING I (3)
PR: Cl. Procedures appropriate in meeting the needs of handicapped individuals in the rehabilitation process. Must be taken concurrently with EGC 5850. (S/U only.)

EGC 5496 THEORETICAL ISSUES IN APPLIED ALCOHOL ABUSE IN REHABILITATION COUNSELING (4)

EGC 5725 INTERPERSONAL ASPECTS OF REHABILITATION COUNSELING I (4)
PR: Cl. Focuses on the effective utilization of one's self in the various counseling and coordinating relationships of the rehabilitation process. An introduction to encounter, body awareness, Gestalt counseling techniques, and related approaches.

EGC 5850 PRACTICUM I (1)
PR: Cl. Supervised observation experience and participation in counseling services in various rehabilitation agencies. Must be taken concurrently with EGC 5493. (S/U only.)

EGC 5905 DIRECTED STUDIES (1-4)
PR: Cl. Study in rehabilitation counseling area under the direct supervision of a faculty member. May be repeated for a maximum of 10 hours credit.

EGC 6205 EVALUATION IN THE REHABILITATION PROCESS (4)
PR: Cl. Examine the evaluation procedure from the point of view of providing reliable and valid information for use in the counseling process.

EGC 6374 VOCATIONAL EVALUATION, ADJUSTMENT SERVICES, AND PLACEMENT OF THE HANDICAPPED AND DISADVANTAGED (2-4)
Methods and techniques employed to assess the mental, social, physical, and vocational problems of handicapped and disadvantaged persons. Diagnosis, evaluation, and placement in relation to vocational potential.

EGC 6375 PLACEMENT METHODS AND PROCESSES (4)
An in-depth examination of placement methods and processes with the handicapped. Includes a survey of work requirements in different occupations and how these relate to specific functional limitations.
EGC 6417 APPLICATIONS OF LEARNING PRINCIPLES (4)
PR: Prior course in learning or CI. Application of various learning principles and procedures to problems in specialized settings.

EGC 6468 PSYCHOSOCIAL DISABILITY IN REHABILITATION COUNSELING (4)
PR: EGC 5725. Personal, social, and vocational consequences of emotional and social disabilities.

EGC 6470 PRACTICUM IN APPLIED ALCOHOL ABUSE IN REHABILITATION COUNSELING (4)
PR: EGC 5496 and EGC 6497. An extension of EGC 5496 and EGC 6497 with emphasis on field work in alcoholism and alcoholism treatment.

EGC 6494 SEMINAR IN PRINCIPLES AND PRACTICES OF REHABILITATION COUNSELING II (3)
PR: EGC 5725, EGC 5493, and EGC 5850. Continuation of EGC 5493. Must be taken concurrently with EGC 6851. (S/U only.)

EGC 6497 THEORETICAL AND EXPERIENTIAL APPROACHES TO COUNSELING THE ALCOHOL ABUSER (4)
PR: EGC 5496 and CI. An extension of EGC 5496 with emphasis on experiential approaches to counseling the alcohol abuser.

EGC 6566 GROUP WORK IN REHABILITATION COUNSELING (4)
PR: CI. Examination of group processes as applicable to rehabilitation counseling.

EGC 6567 ADVANCED GROUP WORK IN REHABILITATION COUNSELING (4)
PR: CI. Extension of EGC 6566 with emphasis on field work.

EGC 6727 INTERPERSONAL ASPECTS OF REHABILITATION COUNSELING II (4)
PR: EGC 5725. An extension and intensification of skills developed in EGC 5725.

EGC 6767 RESEARCH METHODOLOGY IN REHABILITATION (4)
PR: CI. The aim of this course is to help students evaluate and utilize available research studies as well as to develop their own research skills. An individual research project is required.

EGC 6851 PRATICUM II (1)
PR: EGC 5725, EGC 5493, and EGC 5850. Continuation of EGC 5850. Must be taken concurrently with EGC 6494. (S/U only.)

EGC 6885 INTERNSHIP IN REHABILITATION (8)
PR: EGC 6727, EGC 6494, and EGC 6851. Student placement in an approved intern setting for a minimum of 400 hours of supervised experience. (S/U only.)

EGC 6906 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

EGC 6915 DIRECTION RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

EGC 6934 SEMINAR IN REHABILITATION COUNSELING (1-4)
PR: CI. Seminar in selected issues and problems in rehabilitation counseling. Subject and scope to be determined by instructor. May be repeated for credit with different content.

EGC 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

SOCIAL SCIENCES (INTERDISCIPLINARY)

UNDERGRADUATE COURSES

SSI 4162 THE CITY AND MAN (3)
Topics to be selected from the following: the city and its ills; proposed new types of community formation; planning and community; the social ecology of the city; conventional versus innovative approaches to the problems of the community.

SSI 4164 SOCIAL ISSUES OF OUR TIME (3)
Topics to be selected from the following: automation and cybernation and the social problems they generate; special problems of a technological civilization; the implications of changing social patterns of Western culture and opportunities for social re-construction.

STA 3122 SOCIAL SCIENCE STATISTICS (3)
Topics selected from the following: measures of central tendency and variability probability and the normal curve, correlations, curve fitting, scale and index number theory, polling, interview and survey techniques, content analysis. Students who successfully complete this course may also receive credit for either GEB 2111, Business and Economics Statistics I or STA 3023, Introductory Statistics I.

GRADUATE COURSES

SSI 5934 SELECTED TOPICS (1-3)
PR: CI. plus senior standing or graduate status. To provide advanced students with interdisciplinary study of selected topics. May be repeated. (Also offered under African and Afro-American Studies.)

SSI 6900 DIRECTED READINGS (1-3)
PR: CI and graduate standing. To provide graduate students with an intensive reading of interdisciplinary nature in areas of specific interest. May be repeated.

SSI 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

SOCIAL WORK

UNDERGRADUATE COURSES

SOW 3101 HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT I (3)
PR: All pre-core courses and SOW 3203. Restricted to Social Work majors, others by Department permission. An integrating human behavior-social environment emphasizing dynamics of behavior and environment factors as they relate to social work practice with individuals and families.

SOW 3102 HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT II (3)
PR: All pre-core courses, SOW 3203 and SOW 3101. Restricted to Social Work majors, others by Department permission. An integrating human behavior-social environment course emphasizing dynamics of behavior and environmental factors as they relate to social work practice at the macro-system level. Attention is given to the application of knowledge of behavioral phenomena related to groups, organizations, and community in the practice situation.

SOW 3203 INTRODUCTION TO SOCIAL WELFARE AND SOCIAL WORK (4)
An introductory course tracing the development of the American social welfare system and the development of social work as a major profession within that system. Some supervised agency volunteer experience is included as a course requirement.

SOW 3403 RESEARCH AND STATISTICS FOR SOCIAL WORK (4)
PR: All pre-core courses and SOW 3203. Restricted to Social Work majors, others by Department permission. The purpose of this course is two fold: to familiarize the student with research as it is practiced in the profession of Social Work; and to equip the student with those theoretical understandings necessary to be a critical consumer of social work research.

SOW 4233 SOCIAL WELFARE: POLICY & PROGRAM (4)
PR: All pre-core courses and SOW 3203. Restricted to Social Work majors, others by Department permission. An advanced policy course taking an analytical approach to contemporary social welfare policy issues and current social welfare programs.

SOW 4341 MULTI-METHODS OF SOCIAL WORK PRACTICE I: MICRO-SYSTEM INTERVENTION (5)
PR: All pre-core courses, SOW 3203. SOW 3403 and SOW 3101 may be taken as CR or PR. Restricted to Social Work majors, others by Department permission. First in a sequence of three practice courses emphasizing the beginning development of skills from practice knowledge. Interventive methods with individuals, families and small groups are emphasized. Some agency field work required.
SO 4343  MULTI-METHODS OF SOCIAL WORK
PR: All pre-core courses, SOW 4341, SOW 4232, and SOW 3102 may be taken as PR or CR. Restricted to Social Work majors, others by Department permission. Second practice course emphasizing intervention at the community and organizational level. Builds upon theoretical and practical content of SO 4341. Some agency field work required.

SO 4361  SENIOR SEMINAR
PR: All pre-core courses; all core Social Work courses, except that SO 4510 may be taken as CR. This course is the final course taken in the BSW curriculum. It is restricted to Social Work majors in their final stages of the senior year. The course serves as a means for assisting the student in synthesizing and integrating his/her learning experiences in the BSW program.

SO 4510  FIELD PLACEMENT
PR: Completion of all social work core courses except SO 4361. Restricted to social work majors in Senior year. Supervised field placement in a social welfare organization consisting of 35 hours per week in the field and 3 hours per week in an integrated practice seminar which constitutes the third and final course in the practice sequence.

SO 4900  DIRECTED READINGS
PR: Completion of four social work courses including SO 3403, upper division standing, and Department permission. Content dependent upon student interest and ability. A contract will be jointly developed by student and instructor specifying nature of work to be completed and approved by Program Chairperson. May be repeated up to 8 credit hours.

SO 4930  VARIABLE TOPICS IN SOCIAL WORK
Restricted to Social Work majors, others by Department permission. Course is taken as an elective. Variable title courses will selectively expand on the four sequence areas in the Social Work core curriculum (Social Welfare Policy and Services, Social Work Practice, Social Research Courses, and Human Behavior and Social Environment) and focus more minutely on specific areas relevant to the student's educational plan. May be repeated in varying topical areas.

SOCIOLOGY
UNDERGRADUATE COURSES
DHE 4101  POPULATION
PR: SOC 2000 or CI; upper division standing. Sociological determinants of fertility, mortality and migration; theories of population change.

LEI 4163  LEISURE IN SOCIETY
Facts and trends of changing leisure-time patterns in the USA and other countries; various conceptualizations of leisure; relationships of non-work time to work attitudes, personality, family, community, sub-cultures, religion, value systems, social class, and the functions of government.

LEI 4167  SPORT IN SOCIETY
An examination of the broad issues concerning sport in both a historical and contemporary perspective. Sport will be viewed in relation to social institutions, economic considerations, mass media, and the sport group as a micro-social system.

MAF 2001  MARRIAGE
Study of pre-marital and marital relations. Social, cultural, and personal factors related to success and failure in mate selection and marriage. Does not count for sociology major credit.

MAF 3501  THE FAMILY
PR: SOC 2000 or CI. Principles of family organization, social adjustment, and control. Maturation, socialization, and stability of the family.

SOC 1020  CONTEMPORARY SOCIAL PROBLEMS
Application of sociological concepts and principles to the description and analysis of major social problems of modern societies. Does not count for sociology major credit.

SOC 2000  INTRODUCTION TO SOCIOLOGY
Nature and application of sociological concepts, theories, and methods; analysis of societies, associations and groups; social processes and social change.

SOC 2484  CAREERS IN SOCIOLOGY
PR: One course in sociology. An examination of sociology as a career base and as a basis for general education. Employment opportunities, occupational skills taught in the several courses, and other useful aspects of sociology will be discussed. Description of the several subfields of specialization and a brief introduction to the courses taught in the department will lead to the student's making a tentative program schedule for his major. The value of sociology to the individual as a self-actualizing person of unique worth will be stressed. (S/U only.)

SOC 3211  SOCIOLOGY OF RELIGION
PR: SOC 2000 or CI. Types, sources, and functions of religious behavior. Religious behavior in relation to other aspects of personality and culture.

SOC 3410  SOCIAL STRATIFICATION
PR: SOC 2000 or CI. Social status and social stratification, social class as a factor in behavior, social mobility.

SOC 3422  SOCIAL ORGANIZATION
PR: SOC 2000 or CI. Social organization in the broadest sense, including institutions and associations, as well as variations in role and status.

SOC 3500  SOCIAL INVESTIGATION

SOC 3612  FOUNDATIONS OF THEORY
PR: SOC 2000 or CI. Consideration of selected theories in sociology and procedures of systematic theory construction.

SOC 3695  COMMENTARY FILM MAKING IN THE SOCIAL SCIENCES
PR: Major in the College of Social and Behavioral Sciences and CR in an upper division course. For students majoring in some other college, approval by major professor and instructor of course are both required, but concurrent registration in one of the social and behavioral science courses is maintained. The consideration of the theoretical and technical requirements for expressing social science concepts and propositions on film. Film planning, camera techniques, editing silent film, and the utilization of the independent sound (tape cassettes) in the commentary film. Ethics of film making.

SOC 3696  LABORATORY WORK IN COMMENTARY FILM MAKING IN THE SOCIAL SCIENCES
PR: SOC 3695, CR in a course in the social and behavioral sciences with instructor's approval to enable student to make a film in lieu of some other course requirement. A continuation of lab and field work in the making of commentary films. Camera, editorial and problems of independent sound solved in the context of making a film in one of the social sciences. Does not count for sociology major credit. May be repeated for a maximum of three credits. (S/U only.)

SOC 3745  RACIAL AND ETHNIC RELATIONS
PR: SOC 2000 or CI. Comparative study of interracial relations, social tensions, attitudes, and modes of adjustment in various areas of the world.

SOC 3800  SOCIAL PSYCHOLOGY
PR: PSY 2012 or SOC 2000. Behavior of the individual human being as affected by social and cultural influences of modern society.

SOC 4130  JUVENILE DELinquency
PR: SOC 2000 or CI; upper division standing. Theories of delinquency, patterns of delinquent behavior, methods of control and treatment.

SOC 4150  CRIMINOLOGY
PR: SOC 2000 or CI; upper division standing. Etiology of criminal behavior; law enforcement, crime in the United States; penology and prevention.

SOC 4221  POLITICAL SOCIOLOGY
PR: SOC 2000 or CI. An examination of the social factors that affect government, politics, and political behavior.

SOC 4261  SOCIOLOGICAL IMPLICATIONS OF INDUSTRIALIZATION
PR: SOC 2000 or CI. Socio-cultural elements which define and accompany the process of industrialization as observed in mature industrial nations.
SOC 4316 URBAN SOCIOLOGY (3)
PR: SOC 2000 or CI; upper division standing. The social structure of the community in modern industrial societies. Analysis of community change.

SOC 4402 SOCIETY IN TRANSITION (3)
PR: Introduction to Sociology and upper level standing. An analysis of the forces for change in contemporary society, utilizing a sociological perspective.

SOC 4531 COMPUTERS IN SOCIOLOGICAL RESEARCH (2)
PR: SOC 3000 and STA 3122 or equivalent. Introduction to the uses of computers in sociological research. Major emphasis is upon the use of statistical packages (principally SPSS) in data analysis.

SOC 4561 SOCIOLOGY OF THE ARTS (3)
PR: SOC 2000 or CI; upper division standing. The creation, distribution and use of arts from a sociological perspective; the social roles involved.

SOC 4850 COLLECTIVE BEHAVIOR (3)
PR: SOC 2000 or CI; upper division standing. Study of the development of group and mass behavior—crowds, social movements.

SOC 4910 INDIVIDUAL RESEARCH (1-3)
PR: Four courses in sociology, including SOC 3500, upper division standing, at least 3.0 overall GPA. or CI. Content dependent upon interest and competence of student. A contract specifying the work to be done must be completed and signed by both the student and the chairperson of the department before registration for this course will be permitted. May be repeated for credit. Up to 3 credits may be counted towards meeting major elective requirements.

SOC 4930 TOPICS IN SOCIOLOGY (3)
PR: 12 semester hours in Sociology and prior CI. May be repeated for credit. See class schedule for content.

SOC 4935 SENIOR SEMINAR (3)
For seniors majoring in sociology or other social sciences. Major issues in sociology, stressing theory and research.

GRADUATE COURSES

MAF 6621 FAMILY ANALYSIS (3)
PR: Course in Family or CI. Theory of interpersonal relations and interaction in the modern family. Analysis of functions and roles.

SOC 5265 INDUSTRIAL SOCIOLOGY (3)
PR: SOC 2000 or CI; upper division standing. Interaction, communication and authority in economic organizations; the factory as a social system.

SOC 5405 SOCIAL CHANGE (3)
PR: SOC 2000 or CI; upper division standing. Major theories of social and cultural change, and mechanisms of change in various societies.

SOC 5804 SOCIAL INTERACTION (3)
PR: SOC 3800 or CI; upper division standing. Interpersonal influence, complex behavior, role, conflict, and social situational factors.

SOC 5825 SOCIOLOGY OF SMALL GROUPS (3)
PR: SOC 2000 or CI; upper division standing. Theory of small group structure, mechanics of interaction, observation of small groups.

SOC 6106 DEVIANCE & CONTROL (3)
PR: Course in criminology or juvenile delinquency or CI. Theories of control and deviance with research application in problem areas.

SOC 6302 COMMUNITY ANALYSIS (3)
PR: Course in Urban Sociology or CI. Theories of community and community organization. Methods of community study; problems of urban areas.

SOC 6426 COMPLEX ORGANIZATIONS (3)
PR: Course in Social Organization or CI. Organizational theory, bureaucratic models, authority, power legitimation, and types of formal organization.

SOC 6502 METHODS OF RESEARCH (3)
PR: Course in Social Investigation or CI. Logic and practice of research; problems of observation and data collection, data processing, and evaluation.

SOC 6526 SOCIOLOGICAL STATISTICS (4)
PR: STA 3122 or CI. Logic and application of parametric and nonparametric statistical analysis for sociological data.

SOC 6606 CONTEMPORARY SOCIOLOGICAL THEORY (3)
PR: Undergraduate course in sociological theory or CI. Emphasizes logical and conceptual dimensions of theory and theory construction.

SOC 6699 THE COMMUNICATION OF SOCIOLOGY (1)
PR: SOC 6502, SOC 6526, SOC 6606, or CI. Designed to help students define and formalize more effective efforts at communicating sociology. Majors only.

SOC 6805 SOCIAL PSYCHOLOGY SEMINAR (3)
PR: Course in Social Psychology or CI. Stresses contemporary developments in social psychological theory and empirical research.

SOC 6909 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

SOC 6912 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

SOC 6933 SPECIAL TOPICS-SOCIOLOGY (3)
PR: CI. Content varies according to interests of students and instructor. May be repeated for credit.

SOC 6971 THESIS MASTER'S (var.)
Repeatable. (S/U only.)

WOMEN'S STUDIES PROGRAM

UNDERGRADUATE COURSES

ANT 4302 WOMEN IN CROSS-CULTURAL PERSPECTIVE (3)
PR: ANT 2000, ANT 3410, or CI. A cross-cultural perspective on women. The course focuses on various theories, models, and beliefs about male-female behaviors and interactions in human cultures throughout history and in various societies in the world today. (Also offered under Anthropology.)

LIT 3414 THE IMAGE OF WOMEN IN LITERATURE (4)
PR: ANTH 2000, or CI. The representation of women as embodied in statutory and case law. Open to majors and non-majors. (Also offered under Political Science.)

POS 4693 WOMEN AND LAW (4)
Issues concerning the legal aspects of sex and sex-based discrimination as embodied in statutory and case law. Open to majors and non-majors. (Also offered under Religious Studies.)

REL 3145 WOMEN AND RELIGION (4)
An analysis of the status and roles of women as compared to men in the Judeo-Christian tradition. Contemporary issues raised by feminist theologians and scholars and the controversies surrounding them, including the ordination of women; type of language and imagery used in religious literature; religious attitudes toward sex roles and female sexuality; implications of the religious tradition for men as well as women. (Also offered under Religious Studies.)

SOP 3742 PSYCHOLOGY OF WOMEN (3)
An examination of theories of female personality in historical perspective. Current research on sex differences, socialization, sexuality, psychology of reproduction. Emerging roles of women as related to social change and developmental tasks of the life cycle. (Also offered under Psychology.)

WST 2010 INTRODUCTION TO WOMEN'S STUDIES I (3)
A survey of major issues relevant to the female experience: the women's movement; social, historical, and psychological implications.

WST 2011 INTRODUCTION TO WOMEN'S STUDIES II (3)
PR: WST 2010 or CI. A survey of major issues relevant to the female experience, marriage and the family, sexuality, the economy and professions, art and creativity.
WST 3210 WOMEN IN WESTERN CIVILIZATION I (4)
A survey of the attitudes towards sex roles, female sexuality and the relation of gender to power, and the status of women compared to that of men, in the ancient Near East, ancient Greece, ancient Rome, Northern and Western Europe in the early Middle Ages. (Also offered under History.)

WST 3220 WOMEN IN WESTERN CIVILIZATION II (4)
A survey of the differential impact of European history on men and women, and the status of various classes of women compared with that of men. Roles of women in the late Middle Ages, Renaissance/Reformation/witch trials, and in the economic, political, social and ideological upheavals as Europe moved into the modern period. (Also offered under History.)

WST 3275 WOMEN IN THE DEVELOPING WORLD (3)
This course surveys the status of women in Asia, Africa, Latin and Caribbean America as compared to the USA, Canada, West Europe, and Marxist-Leninist countries. (Also offered under International Studies Program.)

WST 3360 MEN AND SEXISM (4)
This course deals with the ways in which sex role conditioning affects the lives of men. The factors involved and the development of this conditioning will be studied and alternatives to these sex role models will be discussed as well.

WST 4309 THE FEMALE EXPERIENCE IN AMERICA (4)
PR: WST 2010, or WST 2011, or CI. A study of the female experience in America based on newly-published diaries, letters, journals and writings by women of various classes, races, ethnic groups, and on the new data, methodology and research on American women by feminist historians. (Also offered under History.)

WST 4310 FEMINISM IN AMERICA (4)
PR: WST 2010, or WST 2011, or CI. Emergence of the women's movement in the nineteenth century in response to the female experience in America: origins, new theoretical issues raised, practical applications. Sources, issues and implications of 20th century feminism in historical context; continuities and discontinuities with the earlier women's movement. (Also offered under History.)

WST 4320 WOMEN'S BODY/WOMEN'S MIND (4)
PR: WST 2010, or WST 2010, or CI. How the physical and mental health care system has contributed to and reinforced the socialization process for women, counterbalanced by special emphasis on new, unalienating modes of women experiencing themselves.

WST 4380 HUMAN SEXUAL BEHAVIOR (4)
The dynamics of human sexuality including biological, constitutional, cultural, and psychological aspects. Exploration of the range of sexual behavior across groups. Sources of beliefs and attitudes about sex, including sex roles and sexuality.

WST 4900 DIRECTED READINGS (1-3)
PR: CI. plus upper division standing. To provide advanced students with intensive reading of interdisciplinary nature in areas of specific interest. May be repeated up to six credit hours.

WST 4910 DIRECTED RESEARCH (1-3)
PR: CI plus upper division standing. To provide advanced students with interdisciplinary research experience in areas of specific interest. May be repeated up to six credit hours.

WST 4930 SELECTED TOPICS (1-3)
PR: WST 2010 or CI. Study in special areas such as Women and Health, The Aging Woman, and the Professions, Women in the Arts.

WST 4935 SEMINAR IN WOMEN'S STUDIES (3)
PR: WST 2010 or CI. In-depth study of research in one or more areas of topical interest to students and staff. Research involvement by students required.
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and Affirmative Action
Janifer M. Judisch

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Harold M. Schroder

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Thomas E. Ness

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G. Hartley Mellish

Center for Economic and Management Services
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William Manck

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Management Development
Maryanne M. Rouse

Center for Economic Education
Dick J. Puglisi

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Jack Moore

Communication
John I. Sisco

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Humanities
Theodore Hoffman

Mass Communications
Emery L. Sasser

Philosophy
Willis H. Truett

Religious Studies
William C. Tremmel

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Ancient World Program
(Acting)
Linnea Dietrich

Division of Language (Acting)
James A. Parrish

College of Arts and Letters

Dean

David H. Smith

Associate Dean
Sara M. Deats

Assistant to the Dean
Barbara C. Cox

Chairpersons:

American Studies
Jack Moore

Communication
John I. Sisco

English
William J. Heim

Humanities
Theodore Hoffman

Mass Communications
Emery L. Sasser

Philosophy
Willis H. Truett

Religious Studies
William C. Tremmel

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A. Edward Urichard

Assistant Dean for Administration
Ed Steiner

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Victor Drapella

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Vance Jennings

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John Smith

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Lloyd Bray

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John Smith

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Frank J. Cozzetto

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Gregory R. Nicolosi

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College of Business Administration

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Management
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G. Hartley Mellish

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William Manck

Center for Professional and
Management Development
Maryanne M. Rouse

Center for Economic Education
Dick J. Puglisi
Chairpersons:

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Biochemistry ......................................... Joseph G. Cory
Comprehensive Medicine ......................... William A. Sodeman, Jr.
Family Medicine (Acting) ......................... Charles E. Audremann
Internal Medicine ................................ Roy H. Behinke
Medical Microbiology .............................. Herman Friedman
Obstetrics and Gynecology ....................... James M. Ingram
Ophthamology ...................................... William E. Layden
Pathology (Acting) ................................. John U. Balis
Pediatrics .......................................... Lewis A. Barnes
Pharmacology ...................................... Andor Szentivanyi
Physiology .......................................... Carleton H. Baker
Psychiatry .......................................... Anthony Reading
Radiology .......................................... Arthur D. Graham
Surgery ............................................. Roger T. Sherman

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Criminal Justice ..................................... Harold Vetter
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Director, Environmental Health ................... Joseph S. Warner
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Director, Procurement ................................ Keith Simmons
Director, University Police ......................... Paul A. Uravich
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Associate Vice President ........................... Charles F. Hewitt
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Director, Counseling Center ......................... William Anton
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Coordinator, Veteran Affairs ....................... Meredith Dube
Director, Housing and Food Service ................ Raymond C. King
Director, Physical Education, Recreational Sports and Athletics ....................... Richard T. Bowers
Director, Student Health Service ................. Larry E. Stevens
Director, University Center ......................... Phyllis P. Marshall
Director, University Studies ......................... Max C. Dertke
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New Student Relations ............................... Linda Erickson
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Natural Sciences                           Peter A. Kazakis
Social Sciences                            Laszlo Deme

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All members of the University of South Florida faculty and administrative staff, including teaching, research, administrative and professional personnel are listed below in alphabetical order. The listing includes name, current rank and field, first year of continuous appointment to any position in the institution, degrees, and institution and year of terminal degree, as of September 12, 1980. (A semicolon between degrees indicates different institutions.)

**ABRAM, JACQUES** Professor (Music), 1963
*Diploma with Distinction, Juillard School of Music*, 1938

**ACHENBACH, KARL E.** Assistant Professor (Psychiatry), 1979
*B.A.; Ph.D., University of Florida, 1966*

**ACKERMAN, DORIS J.** Associate University Librarian Libraries, 1969
*B.A.: M.L.S., Rutgers, 1969*

**ADAIR, W. LEE, JR.** Associate Professor (Biochemistry), 1975
*Sc.B.; M.D., Georgetown University, 1968*

**ADAMS, PATRICIA B.** Assistant Professor (Nursing), 1976
*B.S.N., M.N., University of Florida, 1974*

**ADAMS, PATRICIA W.** Counselor and Adviser (University Studies, Student Affairs), 1965
*B.S.; M.Ed., University of Mississippi, 1963, Ed. G.C.*

**AGETT, JOHN A.** Student Affairs Coordinator (Financial Aids, Student Affairs), 1980
*B.A.; M.S., State University of New York at Albany, 1967*

**AGRESTI, DAVID L.** Assistant Professor (Clinical Psychologist (Counseling)), 1975
*Ph.D., State University of New York at Albany, 1975*

**AGETT, JOHN A.** Student Affairs Coordinator (Financial Aids, Student Affairs), 1980
*B.A.; M.S., State University of New York at Albany, 1967*

**ALBER, BRADLEY G.** Assistant Professor (Music-SYCOM), 1978
*B.M.; M.M., D.M.A., University of Illinois, 1978*

**ALEXANDER, MICHAEL D.** Clinical Psychologist (Counseling), 1975
*B.S., M.D., Dow Medical College, Karachi, Pakistan, 1965*

**ALEXANDER, W. LAUREL** Lecturer (Sociology), 1972
*B.A.; M.A., Ohio State University, 1966*

**ALEXANDER, LUELLA K.** Clinical Psychologist (Counseling), 1975
*Sarasota Campus (Part time)*

**ALEXIOU, NICHOLAS G.** Assistant Professor (Comprehensive Medicine), 1979
*A.B.; M.P.H.; M.D., University of Vermont, 1955*

**ALLEN, EDMUND E.** Associate Professor (Interdisciplinary Social Science), 1964
*B.S.; M.S.; Ed. D., University of Florida, 1964*

**ALLEN, HAROLD C.** Assistant Professor (Management), 1967
*B.A.; M.B.A.; Ph.D., University of Florida, 1969*

**ALLEN, JAMES L.** Professor (Engineering), 1972
*B.E., M.S.E.E., Ph.D., Georgia Institute of Technology, 1966*

**ALLEN, NOLA A.** Associate Professor (Criminal Justice), 1979
*B.A., LL.B.; J.D.: M.A., Ph.D., University of Notre Dame, 1979*

**ALTUS, PHILIP** Assistant Professor (Internal Medicine), 1976
*A.B.; M.D., State University of New York, Upstate Medical Center, 1971*

**ALVAREZ, MARVIN R.** Professor (Biology), 1966
*B.S.; M.S., Ph.D., University of Florida, 1964*

**AMMONS, J. MICHAEL** Assistant Research Scholar/Scientist (Electrical Engineering), 1980
*B.A.; M.S., Ph.D., University of South Florida, 1980*

**ANDERSON, DONALD J.** Director (Institutional Research), 1967
*B.S.; M.A., University of South Florida, 1971*

**ANDERSON, E. CHRISTIAN** Professor (Psychological and Social Foundations Education), 1964
*B.S., M.A., Ph.D., University of Michigan, 1964*

**ANDERSON, EUGENE S.** Professor (Music), 1963
*B.M., M.M., Illinois Wesleyan University, 1937*

**ANDERSON, JEAN R.** Department Head and University Librarian (Libraries), 1975
*Ph.D., University of South Florida, 1979*

**ANDERSON, MARIA J.** University Physician (Student Health Services, Student Affairs), 1978
*M.D., University of Havana School of Medicine, 1961*

**ANDERSON, MELVIN V.** Professor-Chairperson (SMF-Engineering), 1969
*B.S., M.S., Ph.D., Carnegie-Mellon University, 1967, P.E.*

**ANDERSON, ROBERT L.** Associate Professor (Marketing), 1971
*B.S.; M.S.; Ph.D., North Texas State University, 1971*

**ANDERSON, WAYNE H.** Assistant in Research (Pharmacology and Therapeutics), 1980
*B.S., M.Ed., Ph.D., University of South Florida, 1979*

**ANGROSINO, MICHAEL V.** Associate Professor (Anthropology), 1972
*B.A.; Ph.D., University of North Carolina, 1972*

**ANKER, JAMES M.** Professor-Chairperson (Psychology), 1974
*A.B., M.A., Ph.D., Catholic University of America, 1957*

**ANTON, WILLIAM D.** Director (Counseling Center, Student Affairs), 1972
*B.A.; M.A., Ph.D., University of South Florida, 1975*

**APPLEGATE, MINERVA I.** Assistant Professor (Nursing), 1976
*B.S.N.; M.Ed., Columbia University Teachers College, 1974*

**ARNADE, CHARLES W.** Professor (Interdisciplinary Social Science), 1961
*A.B., M.A., Ph.D., University of Florida, 1955*

**ARSENAULT, RAYMOND O.** Assistant Professor (History), 1980
*B.A.; M.A., Ph.D., Brandeis University, 1980*

**ARTHUR, FURMAN C.** Director (Public Affairs), Sarasota Campus, 1975
**BA.**, Bethany College, 1948

**ARTHUR, GARY K.** Assistant Professor (Psychiatry), 1975 (Part time)
*B.S.; M.D., Hahnemann Medical College, 1970*

**ASH, RONALD A.** Associate in Research (Human Resources Institute), 1978
*B.S., M.A., Ohio State University, 1974*

**ASHFORD, THEODORE A.** Professor (Chemistry) and Dean Emeritus (Natural Science), 1960
*B.S., M.S., Ph.D., University of Chicago, 1936*

**AUBEL, JOSEPH L. W.** Associate Professor (Physics), 1964
*B.S., Ph.D., Michigan State University, 1964*

**AUGRENAM, CHARLES E.** Associate Professor-Acting Chairperson (Family Medicine), 1975 (Part time)
*A.B., M.S., M.D., Emory University School of Medicine, 1943*

**AZAR, HENRY A.** Professor (Pathology), 1972 (Part time)
*B.A., M.D., American University of Beirut, Lebanon, 1952*

**BAEK, LLOYD F.** Director (Wetlands Inventory Training Center, School of Continuing Education), 1980
*B.S., M.S., Ph.D., Louisiana State University, 1970*

**BADELY, DANIEL S. III** Assistant Professor (Mass Communications), 1979
*B.S.; M.B.A.; Ph.D., University of Tennessee, 1977*

**BAILEY, OSCAR W.** Professor (Visual Arts), 1969
*B.A., M.F.A., Ohio University, 1958*

**Baker, carleton H.** Associate Dean-Professor-Chairperson (Physiology), 1971
FACULTY AND ADMINISTRATIVE STAFF

B.A.; M.A., Ph.D., Princeton University, 1955

BALFOUR, GERALD A. Associate Professor (Management), 1980 St. Petersburg Campus

B.A.: M.L.I.R.; Ph.D., Michigan State University, 1975

BALIS, GENE A. Assistant Professor (Surgery), 1976

A.B.; M.D., Hahnemann Medical College, 1967

BALIS, JOHN U. Professor (Pathology), 1978

M.D., National University of Athens, Medical School, Greece, 1957

BANES, RUTH A. Assistant Professor (American Studies), 1979

B.A., Ph.D., University of New Mexico, 1978

BARBER, MICHAEL R. Director (Multipurpose Facility, Student Affairs), 1980

B.S.: M.Ed., University of Toledo, 1980

BARBER, SOTIRIOS A. Associate Professor (Political Science), 1967

B.A., M.A., Ph.D., University of Chicago, 1972

BARCO, JAMES M. Counselor to Students (Housing and Food Services, Student Affairs), 1979

B.A.: M.S., Florida State University, 1979

BARKHOLZ, GERALD R. Assistant Professor (Library, Media and Information Studies Education), 1968

B.S., M.Ed.; Ed.D., University of Florida, 1976

BARNARD, JAMES W. Professor (Psychological and Social Foundations Education), 1968

A.B.; M.A.; Ph.D., Yale University, 1963

BARNES, LEWIS A. Professor-Chairperson (Pediatrics), 1972

A.B., M.D., Harvard Medical School, 1944 M.A. Hon.

BARRELL, CAROLYN L. Student Affairs Coordinator (Physical Education, Student Affairs), 1970

B.S.; M.A., Appalachia State Teachers College, 1962

BARRY, PATRICIA P. Assistant Professor (Internal Medicine), 1979

B.S.; M.D., University of South Florida, 1975

BARTELS, LOREN J. Assistant Professor (Surgery), 1980

A.B.; M.D., University of South Florida, 1974

BARTLETT, ALTON C. Professor (Management), 1967

B.S.; Ph.D., Wisconsin, 1964

BARTLETT, PATRICIA R. Assistant Professor (Comprehensive Medicine), 1979

M.B., Ch.B., University of Cape Town, South Africa, 1969

BARYLSKI, ROBERT V. Associate Dean/Director (Sarasota Campus), 1979

B.A.; M.A., Ph.D., Harvard, 1972

BASS, EVERTT A. Assistant Athletic Coach (NCAA Basketball, Student Affairs), 1980

B.A.; M.P.A., Kentucky State University, 1975

BASSUK, DANIEL E. Assistant Professor (Religious Studies), 1970

B.S.; M.A.; Ph.D., Drew University, 1974

BATES, MARGARET L. Professor (Social Sciences), New College of USF, 1975 Sarasota Campus

B.A.; M.A.; Ph.D.; LL.D., Ohio Wesleyan University, 1974

BATTLE, JEAN A. Professor (Psychological and Social Foundations Education), 1959

B.A., M.A., Ed.D., University of Florida, 1953

BAUDIN, LARRY A. Associate Business Manager (Medical Center), 1972

B.S., Nichols State University, 1968

BAUMGARTEN, STEVEN A. Associate Professor (Marketing), 1976

B.L.E.; M.S.; Ph.D., Purdue University, 1971

BEACH, DOROTHY R. University Counseling Psychologist (Counseling Center, Student Affairs), 1972

B.A., M.A.; Ed.D., Nova University, 1975

BEAN, CHARLES F. Coordinator (Engineering), 1968

B.P.; M.E.; University of South Florida, 1968, P.E.

BEASLEY, BOB L. Associate Professor (Physical Education, Education), 1970

B.A.: M.Ed., Ph.D., Florida State University, 1968

BEASLEY, W. WAYNE Professor (Educational Leadership Education), 1969

B.S.; M.S., Ed.D., Indiana University, 1964

BEDINGFIELD, SHERRY A. Athletic Coach (Physical Education, Student Affairs), 1979

B.A., M.A., University of South Florida, 1976

BEENHAKKER, ARIE Professor-Coordinator (Finance/Economics), 1973

Ph.D.; Ph.D., Purdue University, 1964

BEHINK, ROY H. Professor-Chairperson (Internal Medicine), 1972

A.B.; M.D., Indiana University School of Medicine, 1946

BEHRENS, WILLIAM W., JR. Director (Florida Institute of Oceanography), St. Petersburg Campus, 1978

B.S.; M.A.; Ph.D.; D.Sc., Gettysburg College, 1974

BEIL, JOANNE M. Assistant Professor (Philosophy), 1980

B.A.; M.A.; Ph.D., University of Southern California, 1980

BELKNAP, DANIEL F. Assistant Professor (Marine Science), 1979

St. Petersburg Campus

B.A.; M.S., Ph.D., University of Delaware, 1978

BELL, JAMES A. Associate Professor (Philosophy), 1974

A.B.; M.A., Ph.D., Boston University, 1969

BELL, JOHN O. Lecturer (Interdisciplinary Social Science, 1969

B.S., J.D., George Washington University, 1939

BELL, LINDA M. Coordinator (Marine Science), 1979 St. Petersburg Campus

B.S., State University of New York at Oswego, 1963

BELL, SUSAN S. Assistant Professor (Biology), 1979

B.A.; M.S.; Ph.D., University of South Carolina, 1979

BELLUM, JOHN C. Visiting Assistant Professor (Physics), 1980

B.S.; Ph.D., University of Florida, 1976

BEOHLAVEK, JOHN M. Associate Professor (History), 1970

B.A., M.A., Ph.D., University of Nebraska, 1970

BELOWICH, DAVID L. Athletic Coach (Physical Education, Student Affairs), 1980

B.S.; M.S., Indiana University of Pennsylvania, 1974

BELSOLLE, ROBERT J. Assistant Professor (Surgery), 1977 (Part time)

B.S.; M.D., New York Medical College, 1969

BELT, JACK W. Associate Professor (Theatre Arts), 1966

B.A.; M.A.; J.D., University of Florida, 1967

BENEDETTI, ROBERT Associate Professor (Social Science), New College of USF, 1975 Sarasota Campus

B.A.; M.A., Ph.D.; University of Pennsylvania, 1975

BENFIELD, WILLIAM F. Professor (Educational Leadership Education), 1968

B.A., M.A., Ph.D., George Peabody College, 1961

BENNETT, CHARLES A. Systems Coordinator (Computer Research Center), 1979

B.A., University of South Florida, 1976

BENNETT, G. KEMBLE Professor-Chairperson (Systems Engineering), 1974

B.S.; M.S.; Ph.D., Texas Tech University, 1970

BENNETT, GORDON L. Assistant Professor (Economics), 1979

B.S.; Ph.D., Texas A&M University, 1977

BENTLEY, JOSEPH G. Professor (English), 1961

B.A., M.A.; Ph.D., Ohio State University, 1961

BENTLEY, MARY ANN M. Lecturer (Theatre), 1975 (Part time)

B.A., University of South Florida, 1962

BENTON, J. EDWIN Assistant Professor (Political Science), 1979

B.A., M.A.; Ph.D., Florida State University, 1978

BENWAY, ROBERT E. Associate Professor (Surgery), 1972 (Part time)

B.S.; M.D., University of Miami, Florida, 1957

BERGGREN, DOUGLAS C. Professor (Humanities), New College of USF, 1975 Sarasota Campus

B.A.; M.A., Ph.D., Yale University, 1959

BERKLEY, RICHARD J. Assistant Professor (Physics), 1963

B.A., M.S., New Mexico Institute of Mining & Technology, 1955

BERMAN, LEONARD J. Student Affairs Coordinator (Cooperative Education and Placement, Student Affairs), 1977

B.S.; M.S., New York University, 1953

BERRY, TOMMY R. Director (Auxiliary Services), 1968

B.A., University of South Florida, 1968

BETZ, JOHN V. Associate Professor (Biology), 1963

B.S.C.; Ph.D., St. Bonaventure University, 1963

BETZER, PETER Professor (Marine Science), 1971

St. Petersburg Campus

B.A.; Ph.D., University of Rhode Island, 1971

BEULIG, ALFRED, JR. Assistant Professor (Natural Sciences), New College of USF, 1975 Sarasota Campus

B.S.; M.S.; Ph.D., City University of New York, 1974

BEVILACQUA, JEANETTE W. Assistant Professor (Nursing), 1977

B.S., M.A.; M.E., Columbia University, 1977

BIDOT-LOPEZ, PASCUAL Assistant Professor (Internal Medicine), 1977 (Part time)
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BROWN, CURTIS J. Counselor/Adviser (Business), 1972 (Part time)
B.S., Florida A&M University, 1963

BROWN, H. KEITH . . . . . Associate Professor (Anatomy), 1974
B.S.; M.S.; Ph.D., Tulane University, 1974

BROWN, JOHN L. . . . . . . University President, 1977
B.S.E.E.; M.A.; Ph.D., Columbia University, 1952

BROWN, LARRY N. . . . . . Associate Professor (Biology), 1967
B.S.; M.A.; Ph.D., University of Missouri, 1962

BROWN, MORTIMER Research Associate (Psychiatry), 1977 (Part time)
B.S.; Ph.D., Vanderbilt University, 1961

BRUCE, RITA G. Associate Professor (Science and Health Education), 1970
B.S., M.S., Ed.D., West Virginia University, 1965

BRUNHL, GORDON Professor (Economics), 1960
B.S., M.B.A., Ph.D., University of Southern California, 1957

BRYANT, ALMA G. Assistant Professor-Program Director (English), 1972
B.S., M.A.; Ed.S., Ed.D., University of Florida, 1976

BRYANT, FRED D. . . . . Director (Health Sciences Library), 1971
A.B., M.S.L.S., Emory University, 1947

BRYANT, HAYDEN C., JR. Associate Professor (Art & Music Education), 1967
B.A., M.A., George Peabody College, 1957

BRYK, KAREN A . . . . Assistant Professor (Nursing), 1976
B.S.N., M.S.N., Adelphi University, 1976

BUENO, EDGAR E. Assistant Professor (Psychiatry), 1973 (Part time)
M.D., University of San Marcos, Lima, Peru, 1965

BUKANTZ, SAMUEL C. Professor (Internal Medicine), 1972 (Part time)
B.S.; M.D., New York University College of Medicine, 1934

BULLOCK, JOHN T. Professor (Science and Health Education), 1966

BURDICK, GLENN A. Dean-Professor (Engineering), 1965
B.S., M.S.; Ph.D., Massachusetts Institute of Technology, 1961

BURGESS, JAMES S. Associate University Attorney (General Counsel), 1979
B.A.; J.D., University of Florida, 1978

BURI, PETER F. Professor (Biology), New College of USF, 1975,
Sarasota Campus
Ph.D., University of Chicago, 1935

BURLEY W. WADE Professor (Psychological and Social Foundations Education), 1966
B.A.; M.Ed., Ph.D., University of North Carolina, 1970

BURNS CANDACE M. Associate Professor-Assistant Dean (Nursing), 1977
B.S.N.; M.S., University of Michigan, 1972

BURTS THOMAS J. Assistant Professor (Religious Studies), 1969
B.A., M.A., M.T.H., Louvain, Belgium, 1960

BURTON, CARMEN S. Counselor/Adviser (Arts and Letters), 1979
B.S., M.A., Florida State University, 1974

BUTCHER, ROBERT H. . . . Associate Professor (Economics), 1963
B.B.A., M.B.A., Ph.D., Louisiana State University, 1967

BUSOT, J. CARLOS Professor-Assistant Chairperson (Chemical Engineering), 1970
B.S., M.S., Ph.D., University of Florida, 1970

BUSSMAN, JOHN F. Associate Professor (Accounting), 1977
B.S., M.Accy., D.B.A., Florida State University, 1973, C.P.A.

BUSTA, JOSEPH F., JR. Vice President (University Relations), 1971
B.S.; M.S.; Ph.D., University of Florida, 1978

BUTLER, CHARLES W. . . . . Director (Physical Plant), 1965
B.A., Lincoln Memorial University, 1942

BYRNE, LUIS O. Assistant Professor (Psychiatry), 1975 (Part time)
M.D., San Marcos University, Lima, Peru, 1964

BYRNE, ROBERT H., JR. Assistant Professor (Marine Science), 1977
St. Petersburg Campus
B.S.; M.S.; M.A.; Ph.D., University of Rhode Island, 1974

CABRILLO, JACOB C., III Associate Professor (Communication), 1970
A.B., A.M., M.D., Indiana University, 1974

CALANDRA, DENISE Associate Professor (Theatre), 1978
B.A.; M.A., Ph.D., University of Nebraska, 1970

Caldwell, Edward Director (Testing and Evaluation) Associate Professor (Measurement and Research Education), 1965
B.S., M.S., Ed.D., Florida State University, 1958

Callan, Sabra M. Instructor (Accounting), 1979
B.A., B.Acc., University of South Florida, 1979

Cameron, WM. BRUCE Professor (Sociology), 1964
B.A., M.A., Ph.D., University of Wisconsin, 1952

Camp, John B. Associate Professor-Program Director (Foreign Languages), 1964
B.M., M.M., Ph.D., Florida State University, 1964

Camp, Paul E., JR. Associate University Librarian (Libraries), 1972
B.A.: M.S.L.S., Florida State University, 1972

Cano, Carlos J. Associate Professor (Foreign Languages), 1970
B.A.; M.A., Ph.D., Indiana University, 1973

Capsas, Cleon W. Professor (Foreign Languages), 1970
B.A., M.A., Ph.D., University of New Mexico, 1964

Caraway, James S. Assistant Professor (Radiology), 1977 (Part time)
B.A.; M.D., University of Tennessee, 1969

Carbonell, Frieda W. Professor (Nursing), 1973

Card, George R. Academic Administrator (Engineering), 1970
B.S.; M.A., University of South Florida, 1971

Carr, Kendall, L. Professor (Marine Science), 1969 St.

Petersburg Campus
B.S., M.S., Ph.D., Oregon State University, 1970

Cargill, Carol C. Associate Professor (Foreign Languages), 1977
B.A.; M.A., Ph.D., Georgetown University, 1974

Carlson, Gerald M. Assistant Professor (Chemistry), 1978
B.S.; Ph.D., Iowa State University, 1973

Carlson, Rebekah L. Assistant Professor (Communicologie), 1968
B.S.; M.S., University of South Florida, 1970

Carmichael, John D. Assistant Professor (Marketing), 1967
B.S., M.B.A., Georgia State University, 1965

Carnahan, Robert P. Assistant Professor (Civil Engineering and Mechanics), 1980
B.C.E.; M.S.S.E.; Ph.D., Clemson University, 1973

Carpenter, William C. Associate Professor (Civil Engineering and Mechanics), 1976
B.S.C.E., Ph.D., North Carolina State University, 1966

Carr, David R. Assistant Professor (History), 1971 St. Petersburg

Campus
B.A.; M.A., Ph.D., University of Nebraska, 1971

Carr, Joseph A. . . . . . . Director (Planetarium), 1960

Carrasco, Magdalena E. Assistant Professor (Humanities), New

College of USF, 1977 Sarasota Campus
B.A.; M.A., M.Phil., Yale University, 1975

Carroll, Delos L., Jr. Associate Professor (Psychological and Social Foundations Education), 1969

Carter, David A. Assistant Professor (Communication), 1973
B.A., M.F.A.; Ph.D., University of Iowa, 1976

Carter, Jana F . . . . . . . . . Assistant University Librarian (Libraries), 1979
B.A.; M.L.S., Florida State University, 1977

Cartlidge, Jack E . . . . . . . . . Associate Professor (Humanities), New
College of USF, 1975 Sarasota Campus
B.A.; M.A., University of Alabama, 1949

Castor, Elizabeth B. Assistant to Vice President (University Relations), 1979

Catlin, Robert A. Associate Professor — Chairperson (Political
Science), 1977
B.S.; M.S.; Ph.D., Claremont Graduate School, 1976

Cavanaugh, Denis Professor (Obstetrics and Gynecology), 1977
M.B., Ch.B., University of Glasgow, 1952

Cavanaugh, Robert M., Jr. Assistant Professor (Pediatrics), 1976
B.A.; M.D., University of Cincinnati College of Medicine, 1970

CaYender, Harrison W. Systems Coordinator (Medicine), 1979
B.S.; M.A., Ball State University, 1974

Ceconi, Isabelle F. . . . . . . . Lecturer (English), 1960
B.A., Wells College, 1940
FOX, ROGER W. Visiting Assistant Professor (Internal Medicine), 1980 (Part time)

B.S.: M.D., Loyola University School of Medicine, 1975

FRANCIS, ROY G. ... Professor — Chairperson (Sociology), 1973

B.A.; M.A.; Ph.D., University of Wisconsin, 1950

FRANK, BARRY A. Assistant Professor (Internal Medicine), 1980

B.A., M.D., University of Oklahoma, 1975

FRANK, ILENE B. Associate University Librarian (Libraries), 1974

B.S.D.: A.M.L.S., University of Michigan, 1973

FRANKLIN, BETTY J. ... Student Affairs Coordinator (Cooperative Education and Placement, Student Affairs), 1978

B.A., University of Florida, 1972

FRANQUES, JOHN T. ... Assistant Professor (Civil Engineering and Mechanics), 1971

B.S., M.S., Ph.D., Louisiana State University, 1971, P.E.

FRAZEE, HENRY S. Visiting Lecturer (Engineering), 1978 (Part time)

B.S.E.; M.S.E., Pennsylvania State University, 1965

FRENCH, DIANA G. ... Assistant Professor (Nursing), 1978

B.S.; M.S.N., Medical College of Georgia, 1976

FRENCHMAN, STUART M. Assistant Professor (Radiology), 1977 (Part time)

B.A.; M.D., Temple University School of Medicine, 1967

FRESHOUR, FRANK W. Associate Professor (Reading Education), 1969

B.S.; M.Ed.; Ed.D., University of Florida, 1970

FRIEDL, FRANK E. ... Professor (Biology), 1960

B.A., Ph.D., University of Minnesota, 1938

FRIEDMAN, FRANCES A. ... Visiting Instructor (Social Work Program), 1980

B.S.; M.S.W., University of Maryland, 1975

FRIEDMAN, HERMAN Professor — Chairperson (Medical Microbiology), 1978

A.B.; M.A.; Ph.D., Hahnemann Medical College, 1937

FROELICH, RALPH O. ... Associate Professor (Music Arts), 1974

B.S., Juilliard School of Music, 1958

FUDGE, WILLIAM G., JR. Associate Professor (Mass Communications), 1972

B.A., M.S., Ph.D., Florida State University, 1975

FUSON, ROBERT H. ... Professor—Chairperson (Geography), 1960

A.B.; M.A.; Ph.D., Louisiana State University, 1958

FUSTUKJIAN, SAMUEL Y. Department Head — University Librarian (Libraries), 1980 St. Petersburg Campus

B.A.; M.S., State University of New York at Oswego, 1980

FUTHEY, DALE E. ... Lecturer (Marketing), 1969

B.S.C., M.A.A.; Ph.D., Ohio State University, 1964

GAGGI, SIGVIO L. ... Associate Professor (Humanities), 1972

B.A.; M.A., Ph.D., Ohio State University, 1972

GALIZIO, LEO J. ... Associate in Research (Human Resources Institute), 1980

B.S., Northwestern University, 1974

GARCIA, JUANITA L. ... Assistant Professor (Gerontology), 1968

B.A.; M.A.; Ed.D., Nova University, 1975

GARCIA, OSCAR N. ... Professor — Acting Assistant Chairperson (Electrical Engineering), 1970

B.S.E.E., M.S.E.E., Ph.D., University of Maryland, 1969

GARCIA, SANDRA A. ... Associate Professor (Psychology), 1974

B.A.; M.A.; Ph.D., University of Southern California, 1971

GARCIA, SONJA W. Assistant University Librarian (Libraries), 1964

B.S.; M.S., University of South Florida, 1977

GARDNER, MELVYN J. ... University Physician (Student Health Service, Student Affairs), 1969 (Part time)

A.B., M.D., Temple University, 1944

GARRELS, ROBERT M. ... Professor (Marine Science), 1979 St. Petersburg Campus

B.S.; M.S., Ph.D., Northwestern University, 1941

GARRETT, SAMUEL J. Professor — Assistant Chairperson (Electrical Engineering), 1967

B.E.E.; M.S.E.E., Sc.D., University of Pittsburgh, 1963

GARRETT, WILLIAM ... Professor (English), 1960 St. Petersburg Campus

B.S., M.A., Ph.D., University of Florida, 1958

GATES, JEAN K. ... Associate Professor (Library, Media, and Information Studies, Education), 1966

B.A., M.S.L.S., Catholic University of America, 1951

GEIGER, O. GLENN Professor (Psychological and Social Foundations Education), 1969

B.A.; Ph.D., University of South Carolina, 1968

GELINAS, ROBERT W. ... Professor (Visual Arts), 1963

B.F.A.; M.F.A., University of Alabama, 1958

GEORGE, MAGDALEN M. Counselor to Students (Housing and Food Service, Student Affairs), 1980

B.S.: M.Ed., University of Vermont, 1980

GERBERING, THOMAS E. Visiting Counselor/Advisor (University Studies, Student Affairs), 1978

B.A., M.A., University of South Florida, 1973

GERMAIN, BERNARD F. ... Associate Professor (Internal Medicine), 1976

B.A.; M.D., Medical College of Georgia, 1966

GESSMAN, ALBERT M. ... Professor (Religious Studies), 1961

B.A.; M.A.; Ph.D., University of Vienna, 1950

GESTEN, ELLIS L. ... Associate Professor (Psychology), 1980

B.A.; M.A.; Ph.D., University of Rochester, 1974

GIBBONS, GORDON M. Assistant Athletic Coach (Physical Education, Student Affairs), 1978

B.S., Springfield College, 1968

GIEH, SUSAN J. Area Administrator (Housing and Food Service, Student Affairs), 1980

B.A.; M.Ed., University of South Carolina, 1979

GILBERT, RICHARD ... Visiting Assistant Professor (Mechanical Engineering), 1978

B.A.; M.S., John Carroll University, 1971

GILMAN, HAROLD F. ... Assistant Professor (Geography), 1979

B.A.; M.A.; Ph.D., University of California at Riverside, 1977

GILMORE, ALDEN S. ... Associate Professor (Gerontology) 1961

B.A.; M.A., Florida State University, 1957

GLASS, HARVEY ... Professor (Electrical Engineering), 1969

B.S., M.S., D.Sc., Washington University, 1965

GLASSER, STEPHEN P. ... Professor (Internal Medicine), 1976

B.S., University of Miami Medical School, Florida, 1964

GLOVER, JEAN P. ... Instructor (Communicology), 1968

B.S., Eastern Illinois University, 1949

GLOVER, KOFI R. A. ... Assistant Professor (Afro-American Studies), 1972

B.A.; M.A., Ph.D., Indiana University, 1975

GLUCKMAN, STEPHEN J. ... Assistant Professor (Anthropology), 1977

B.A.; M.A., Ph.D., The Catholic University of America, 1973

GOFF, ANNE L. Counselor/Advisor (University Studies, Student Affairs), 1978

A.B.; M.Ed., Ohio University, 1971

GOMA, FRANCIS S. ... Associate Professor (Childhood and Language Arts Education), 1967

GROSSMAN, ALLAN ... Assistant (Marine Science), 1958

B.S.; M.Ed.; Ed.D., Indiana University, 1966

GOLDING, LOIS A. ... Professor (Music Arts), 1962


GOLDFIELD, ALLAN L. ... Associate Professor (Internal Medicine), 1974

B.A.; B.S., M.D., University of Minnesota, 1968

GOLDSMITH, GEORGE H. ... Director (Financial Aids, Student Affairs), 1969

B.A.; M.Ed., Tulane University, 1968

GOLLOWAY, GLENN G. ... Associate Professor (Psychiatry), 1976

B.A.; M.D., Cornell University Medical College, 1949

GOMEZ, OSBORNE L. ... Director (Extension Library), 1965 St. Petersburg Campus

A.B., M.A., M.S.L.S., Florida State University, 1969

GOMEZ, RAFAEL A. ... Associate Professor (Radiology), 1977 (Part time)

B.S., B.A.; M.D., University of Habana School of Medicine, 1943

GOMEZ-SANCHEZ, CELO E. ... Visiting Associate Professor (Diabetes Center), 1980

M.D., University of San Marcos, Lima, Peru, 1968

GONZALEZ, JUAN O. ... Professor (Mechanical Engineering), 1965

B.S., M.S., Virginia Polytechnic Institute, 1930

GOODING, DOLORES K. ... Program Director (Engineering), 1975

M.S.E., University of South Florida, 1975

GOODMAN, ADOLPH W. Distinguished Service Professor (Mathematics), 1964

B.Sc., M.A., Ph.D., Columbia University, 1947
KUFFEL, CAROLINE L. Assistant Professor (Sociology), 1978
B.A.; M.S.; Ph.D., University of Pittsburgh, 1979

KAUFFMANN, CAROLINE L. Assistant Professor (Sociology), 1978
B.A.; M.S.; Ph.D., University of Pittsburgh, 1979

KAUFFMANN, DONALD L. Assistant Professor (English), 1968
B.A., M.L.S., University of Iowa, 1966

KAZAKS, PETER A. Associate Professor — Chairperson (Natural Sciences), New College of USF, 1975 Sarasota Campus
B.S.C.; M.S.; Ph.D., University of California, 1968

KAZAR, BARBARA W. Associate Professor (Art and Music Education), 1974

KEARNEY, KEVIN E. Director — Associate Professor (Special Degree Programs), 1964
B.S., M.A., Ph.D., University of Florida, 1960

KEENE, T. WAYNE Associate Professor (Educational Leadership Education), 1963
B.S.; M.Ed., Ed.D., University of Florida, 1963

KEITH, JOHN E. Department Head-University Librarian (Librarians), 1968
B.A., M.L.S., Louisiana State University, 1969

KEITH, ROBERT M. Professor (Accounting), 1969
B.S., M.Acc., Ph.D., University of Alabama, 1969, C.P.A.

KELLER, RONALD K. Associate Professor (Biochemistry), 1975
B.S.; Ph.D., Vanderbilt University, 1973

KELLY, ANNE E. Associate Professor (Political Science), 1963
B.S., M.S., Ph.D., Florida State University, 1961

KELLY, JOHN E. Associate Professor (Mathematics), 1964 St. Petersburg Campus
B.S., M.S., Ph.D., University of Michigan, 1960

KENDALL, HARRY W. Professor (Physics), 1960
B.A., M.S., Ph.D., University of Florida, 1961

KESERSON, DAVID R. Associate Professor (Management), 1966
St. Petersburg Campus
A.B., M.C.S., Dartmouth College, 1938

KESSEY, ALLEN F. Research Assistant Professor (Adult and Vocational Education), 1974
B.A.; M.S.T.; M.S.Ed.; Ed.D., Nova University, 1979

KERN, ROBERT L. Professor (Mass Communications), 1972
B.A.; M.A., Syracuse University, 1970

KETTCHERIS, ARTHUR L. Assistant Director (Libraries), 1973
B.S., M.S.L.S., Florida State University, 1961

KHOBSANDIAN, JAN K. Assistant Professor (Music Arts), 1971
B.S., M.S., University of Illinois, 1970

KIBERT, CHARLES J. Visiting Assistant In (Engineering), 1980
B.S.; M.S., Carnegie-Mellon University, 1976

KNOX, ROBERT H. Professor (Humanities), New College of USF, 1975 Sarasota Campus
A.B., Ph.D., Harvard University, 1959

KNUPPEL, ROBERT A. Associate Professor (Obstetrics-Gynecology), 1979
B.S.; M.P.H.; M.D., New Jersey College of Medicine, 1973

KOHLER, JERRY W. Acting Dean — Associate Professor (School of Continuing Education), 1975
B.S., M.A.; D.Ed., Pennsylvania State University, 1968

KOLDMER, HARRY Assistant Professor (Ophthalmology), 1979
B.A., M.D., Boston University School of Medicine, 1971

KORTHALS, JAN K. Assistant Professor (Neurology), 1980
M.D.; Ph.D., Medical School, Warsaw, Poland, 1968

KOVAC, MICHAEL G. Associate Professor (Electrical Engineering), 1979
B.S.E.E.; M.S.E.E., Ph.D. in E.E., Northwestern University, 1970

KRAEY, STANLEY C. Professor (Civil Engineering and Mechanics), 1972
B.S.S.E.; Ph.D., Northwestern University, 1968

KRAUS, ALLAN D. Professor (Electrical Engineering), 1971
B.E., M.S.M.E., M.E.E.; Ph.D., University of South Florida, 1976

KRONSTRODE, JEREMY M. Professor (Visual Arts), 1963
B.S., M.F.A., University of Michigan, 1963

KRZANOWSKI, JOSEPH J. Associate Professor (Pharmacology), 1971
B.S.; M.S., Ph.D., University of Tennessee, 1968

KUFFEL, CONSTANCE F. Assistant Professor (Communiciology), 1969
B.A., M.A., University of South Florida, 1968, C.C.C.

KUSHNER, GILBERT Professor — Chairperson (Anthropology), 1970
B.A., M.A.; Ph.D., University of Arizona, 1968

KUTCHER, LOUIS W., JR. Assistant Professor (Sociology), 1967
A.B., M.A., Ph.D., University of Minnesota, 1972

LA BARBA, RICHARD C. Professor (Psychology), 1966
B.A.; Ph.D., University of Tennessee, 1965

LANCE, GERALD J. Associate Professor (Medical Microbiology), 1971
A.B., M.S., Ph.D., Northwestern University, 1970

LANDSMAN, MURRY J. Associate Professor (Rehabilitation Counseling), 1969
B.S., M.A.; Ph.D., University of Florida, 1964

LANGSTON, DOUGLAS C. Assistant Professor (Humanities), New College of USF, 1977 Sarasota Campus
B.A.; M.A.; M.A.; Ph.D., Princeton University, 1978

LANNING, JOHN C. Instructor (Anatomy), 1980
B.S.; Ph.D., West Virginia University, 1980

LANTZ, DONALD L. Professor (Psychological and Social Foundations, Education), 1961
A.B., M.A., Ph.D., University of Minnesota, 1961

LARSEN, MERNET L. Associate Professor (Visual Arts), 1967
B.F.A.; M.F.A., Indiana University, 1965

LARY, MARY S. Assistant Professor (Library, Media, and Information Studies, Education), 1978
A.B.; M.S.L.S.: Ph.D., Florida State University, 1975

LASCHE, EUNICE M. Assistant Professor (Internal Medicine), 1978
B.S., M.D., Temple University School of Medicine, 1948

LASETTER, JAMES JR. Assistant Professor (Accounting), 1966
B.S.; M.B.A., University of Chicago, 1964, C.P.A.

LATINA, ALBERT A. Lecturer (Biology), 1960
B.A.; M.S., Florida State University, 1960

LAUSEN, GARY A. Assistant Professor (Accounting), 1980
B.S.; J.D., LL.M., University of Miami Law School, 1972

LAVELLE, CAROLYN D. Associate Professor (Exceptional Child Education), 1970
B.A., M.A., Ph.D., Stanford University, 1966

LAWSON, STEVEN F. Associate Professor (History), 1972
St. Petersburg Campus

LAWRENCE, JOHN M. Professor (Biology), 1965
B.S., A.M., Ph.D., Stanford University, 1966

LAWSON, STEVEN F. Associate Professor (History), 1972

LAYDEN, JAY S. Associate Business Manager (Medical Center), 1971
B.S., Florida State University, 1968

LEATH, ARYA W. Counselor/Adviser (Educational Leadership and Higher Education), 1980
B.A.; University of South Florida, 1973

LEAVENGOOD, LEO B. Counselor/Adviser (University Studies, Student Affairs), 1973
B.S.; M.A., University of South Florida, 1973

LEFRAK, BRUCE V. Assistant Professor (Art and Music Education), 1973

LEFOR, WILLIAM M. Visiting Assistant Professor (Internal Medicine), 1979
B.A.; M.S., Stanford University, 1970

LEISINGER, WILLIAM E. Professor — Chairperson (Ophthalmology), 1972
B.A., M.D., University of Vermont, 1963

LEYLAND, JAY S. Associate Business Manager (Medical Center), 1971
B.S., Florida State University, 1968

LeONE, DONNA R. Associate University Librarian (Educational Resources), 1971
B.A.; M.A.; M.A.L.S., Kansas State College, 1971

LEVERENTZ, MICHAEL L. Visiting Instructor (Geography), 1980
B.A., M.A., University of South Florida, 1973

LEVINE, EDWARD L. Associate Professor (Psychology), 1977
B.S.; Ph.D., New York University, 1970
FACULTY AND ADMINISTRATIVE STAFF

MASSIE, PAUL ........ Associate Professor (Theatre Arts), 1974
MATHENY, ARTHUR R. .... Visiting Assistant in (Biology), 1979
B.S.: M.S., Purdue University, 1971
MATHER, JEN Assistant Provost — Assistant Professor (Provost), New College of USF, 1980 Sarasota Campus
B.A.: M.Phil., Ph.D., Yale University, 1975
MAUERST, STEVEN ... Director (Records and Registration), 1975
B.S., M.S., Florida State University, 1972
MAYBURY, P. CALVIN ........ Professor (Chemistry), 1961
B.S.: Ph.D., Johns Hopkins University, 1952
MAYER, GEORGE H. Professor (History), 1969 Sarasota Campus
B.A.: M.A.; Ph.D., University of Minnesota, 1948
MAZUR, JOSEPH L. Professor — Program Director (Measurement and Research Education), 1970
A.B.: M.A.; Ph.D., Case Western Reserve University, 1968
MC CLELLAN, LESLIE . Professor (Childhood and Language Arts Education), 1964
B.S., M.Ed., Ed.D., University of Missouri, 1961
MC CLENDON, PAUL E. .... Professor (Educational Leadership Education), 1969
B.S.; M.A.: Ed.D., Florida State University, 1963
MC CLOWRY, DANNY P. .... Assistant Professor (Communication), 1977
B.S.: M.Ed.; Ph.D., Ohio State University, 1978
MC CLUNG, GENE E. Professor (Accounting), 1960 St. Petersburg Campus
B.B.A., M.A., Hardin-Simmons University, 1957, C.P.A.
MC CLUNG, NORVEL M. .... Professor (Biology), 1966
A.B.: M.S., Ph.D., University of Michigan, 1949
MC CONNEL, JAMES W. Counselor to Students (Housing and Food Service, Student Affairs), 1979
B.A., M.A., University of South Florida, 1976
MC CORMICK, ROBERT M. Assistant Professor (Music Arts), 1974
B.A.; M.A., San Jose State University, 1973
MC COY, BRENDA W. .... Area Administrator (Housing and Food Service, Student Affairs), 1980
B.S.H.E., University of Georgia, 1964
MC COY, EARL D. .... Assistant Professor (Biology), 1978
B.S.; M.S.; Ph.D., Florida State University, 1977
MC CROSSAN, JOHN A. .... Associate Professor — Chairperson (Library, Media, and Information Studies, Education), 1977
B.A., M.A.; Ph.D., University of Illinois, 1966
MC DONALD, NANCY H. Assistant Professor (Electrical Engineering), 1978
A.B.: M.S.; Ph.D., University of California at Berkeley, 1975
MC DONALD, THOMAS W. Associate Professor (Obstetrics/Gynecology), 1980
A.B.; M.D., University of Louisville, 1971
MC GINNIS, CHARLES E. Visiting Lecturer (Electrical Engineering), 1978
B.E.E.; M.S.E.E., Massachusetts Institute of Technology, 1954, P.E.
MC INTOSH, CHARLES A., JR. .... Associate Dean and Director, Graduate Studies (Business Administration), 1976
B.S.: M.B.A., Syracuse University, 1956
MC LOUTHIAN, THOMAS E. Assistant Professor (Visual Arts), 1978
B.A.: M.F.A., Indiana University, 1978
MC LEAN, EDWARD F. .... Professor (Foreign Languages), 1960
M.A., Ph.D., Duke University, 1961
MC MILLER, SUSAN C. .... Visiting Lecturer (Nursing), 1979 (Part time)
B.S.: M.Ed., University of North Florida, 1974
MC NAI, A. JEANENE .... Department Head-University Librarian (Libraries), 1965
B.A.: M.S.L.S., Indiana University, 1965
MC WATERS, MARCUS M., JR. Associate Professor (Mathematics), 1966
B.S.; Ph.D., University of Florida, 1966
MEAD, C. GAIL .... Instructor (Humanities), New College of USF, 1975 Sarasota Campus
MELARAGO, PETER .... Assistant Professor (Visual Arts), 1978
B.A.: M.A., Boston University, 1976
MELENDI, JOHN C. Assistant Director (Medical Center — Administration), 1964
B.S., Florida Southern College, 1959
MELLISH, G. HARTLEY .... Associate Professor — Acting Director (Management Institute, Business Administration), 1965
B.A.: Ph.D., University of Virginia, 1965
MENDELBART, FRANK Assistant Professor (Ophthalmology), 1979
M.D., University of Miami, Florida, 1960
MENNINGER, RICHARD P. Associate Professor (Physiology), 1971
B.S.C.: Ph.D., University of Kentucky, 1971
MERCADO, MARY J. Associate University Librarian (Libraries), 1975
B.A.: M.L.S., University of Pittsburgh, 1973
MERICK, JOHN A. Associate Professor (Exceptional Child Education), 1968
B.A., M.S., Ph.D., Syracuse University, 1971
MERNER, DIANE T. .... Associate Professor (Biological), 1967
B.S.; M.A., Ph.D., Duke University, 1963
MERRIAM, HARLAND C. Professor (Childhood and Language Arts Education), 1969
B.S., M.Ed., Ed.D., Harvard University, 1959
MERRIAM, KEMPER W. .... Professor (Accounting), 1967
B.B.A., M.B.A.; Ph.D., University of Texas, 1957, C.P.A.
MESSINA, ANTHONY M. Associate Professor (Obstetrics/Gynecology), 1975
B.S., M.D., University of Florida, 1970
MEYER, GEORGE H. Assistant Professor (Mass Communications), 1975
B.S.; M.A., University of Iowa, 1969
MEYER, HERBERT H. Professor — Program Director (Industrial/Organizational Psychology), 1973
B.S.; M.S., M.A., Ph.D., University of Michigan, 1949
MEYER, RICHARD L. .... Associate Professor (Finance), 1970
B.S., M.B.A., Ph.D., University of Wisconsin, 1971
MEYERREICKS, ANDREW J. .... Professor (Biological), 1961
A.B.; Ph.D., Harvard University, 1958
MEYERS, JAMES D .... Associate University Librarian (Libraries), 1974
B.S.: M.S.L.S., Florida State University, 1974
MICHAELIDES, GEORGE J. Associate Professor (Mathematics), 1961
B.S., M.S.; Ph.D., University of Georgia, 1974
MICHAELS, ALLAN S. .......... Assistant Professor (Biological), 1977
B.A., M.A., Ph.D., University of California, Santa Barbara, 1972
MILLER, ARTHUR MCA. Professor (Humanities), New College of USF, 1975 Sarasota Campus
B.A., M.A., Ph.D., Duke University, 1966
MILLER, KAREN L. .... Associate in Research (Pediatrics), 1975
B.A., Cedar Crest College, 1970
MILLER, MARGARET A. .... Associate Professor (Visual Arts), 1970
B.A.; M.A.; University of Hawaii, 1970
MILLER, RICHARD J. .... Assistant Professor (Surgery), 1975 (Part time)
B.S., B.M., M.D., Northwestern University, 1947
MILLER, ROBERT L. .... Lecturer (Industrial Systems Engineering), 1971
B.S., M.S.E., University of South Florida, 1973
MILLER, SHARON G. .... Instructor (Psychiatry), 1979
B.A.: M.S.W., Carleton University, 1974
MILLEKIN, DEAN M. .... Instructor — Acting Assistant Director (Florida Institute of Oceanography), 1973 St. Petersburg Campus
B.A.: M.A., University of South Florida, 1975
MILLS, JOHN L. .... Assistant Professor (Internal Medicine), 1979
B.S.; M.D., Ohio State University School of Medicine, 1974
MITCHELL, RICHARD W. .... Associate Professor (Physics), 1962
B.S.; M.S., Ph.D., Texas A&M University, 1960
MITCHELL, WILLIAM G. .... Director (Instructional Services), 1974
B.A.: M.A.; Ph.D., Michigan State University, 1970
MODY, WILFRED W. .... Assistant Professor (Finance), 1963
B.A., M.S., Texas A&M University, 1966
MOHLENKAMP, BETTY S. .... Associate Professor (Dance), 1979
MOHNEY, DAVID A. .... Assistant In (Educational Leadership and Higher Education), 1970
B.A., Anderson College, 1961
MONLEY, LAURENCE E. .... Professor (Science and Health Education), 1960
B.S.; M.S.; Ph.D., University of Florida, 1956
MONROE, ANNETTA Y. .......... Instructor (Music Arts), 1973
B.M., Oberlin College Conservatory of Music, 1963
MOORE, HARVEY A. ....... Associate Professor (Sociology), Director (Human Resources Institute), 1974
B.A.; M.S.; Ph.D., Case Western Reserve University, 1972
MOORE, JACK B. Professor — Chairperson (American Studies), 1962
B.A.; M.A.; Ph.D., University of North Carolina, 1963
MOORE, JOHN D. Assistant Professor (Humanities), New College of USF, 1980 Sarasota Campus
A.B.; A.M., Ph.D., Stanford University, 1969
MOORE, JUDITH C. Lecturer (Exceptional Child Education), 1973
St. Petersburg Campus
B.A., M.A.; University of South Florida, 1968
MOORE, STEPHEN B. ............ Instructor (Management), 1976
B.A., M.B.A., University of South Florida, 1976
MOORE, WILLIAM A. III University Physician (Student Health Service, Student Affairs), 1980
B.S.; M.D., Creighton University, 1946
MORLEY, ROSEMARY M. Director of Advising (Natural Sciences), 1973
B.A.; M.S., Ed.S.; Ph.D., University of Florida, 1979
MORRISON, GARY R. ......... Assistant Professor (History), 1977
B.S., M.A.; Ph.D., University of North Carolina, 1977
MORRILL, JOHN B. ......... Professor (Natural Sciences), Coordinator (Environmental Studies), New College of USF, 1975 Sarasota Campus
B.A.; M.S., Ph.D., University of Florida, 1958
MORRIS, BEULAH M. Assistant Department Head — Assistant University Librarian (Libraries), 1975 Sarasota Campus
MORRIS, WILLIAM E. ......... Professor (English), 1964
B.A., M.A.; Ph.D., University of North Carolina, 1957
MOSELEY, JAMES G., JR. .... Associate Professor — Chairperson (Humanities), New College of USF, 1975 Sarasota Campus
B.A.; M.A.; Ph.D., University of Chicago Divinity School, 1973
MOSS, RICHARD L. .......... Assistant Professor (Economics), 1974
B.A.; M.A.; Ph.D., Virginia Polytechnic Institute, 1976
MOTTO, ANNA L. ........... Professor (Ancient World Program), 1973
B.A.; M.A.; Ph.D., University of North Carolina, 1953
MOYSE, WILLIAM F. Assistant Professor (Mass Communications), 1971
B.A., M.A., University of South Florida, 1976
MUKHERJEA, ARUNAVA .......... Professor (Mathematics), 1969
B.Sc., M.Sc.; Ph.D., Wayne State University, 1967
MULLINS, LARRY C. Assistant Professor (Aging Studies Program), 1980
B.A.; M.A.; Phil., Ph.D., Yale University, 1978
MUMME, ROY I. ......... Assistant Professor — Director (Pt. Myers Center), 1966
A.B., A.M.; M.Ed., University of North Carolina, 1953
MURPHY, ROBERT J. ......... Associate Professor (Economics), 1964
B.A.; M.A.; Ph.D., Fordham University, 1964
MURTAGH, FREDERICK R. Assistant Professor (Radiology), 1979
A.B.; M.D., Temple University School of Medicine, 1971
MUSGROVE, WALTER J. ......... Professor (Psychological and Social Foundations Education), 1964 St. Petersburg Campus
B.A.; M.A.; Ed.D., University of Maryland, 1965
MUSHINSKY, HENRY R. .............. Lecturer (Biology), 1979
B.S.; M.S.; Ph.D., Clemson University, 1973
MUSSON, CARL F. ........... Coordinator (Fine Arts Events), 1980
B.S.; M.F.A., University of Texas, 1979
MYERS, MARILYN Assistant Professor (Interdisciplinary Social Science), 1973
B.S., Ph.D., State University of New York at Buffalo, 1975
NAERING, DOUGLAS C.E. Associate Professor (Systems Engineering), 1970 St. Petersburg Campus
B.E.; M.Sc., Ohio State University, 1949, P.E.
NAGLE, R. KENT ............ Associate Professor (Mathematics), 1976
B.S., M.A., Ph.D., University of Michigan, 1975
NAGY, FRANKLIN J. Director/Instructor (Educational Leadership and Higher Education), 1980
B.A.; M.S.; Ed.S., Ph.D., University of Florida, 1977
NAZIAN, STANLEY J., JR. Assistant Professor (Physiology), 1979
B.S.; Ph.D., Marquette University, 1977
NEILL, W. TRAMMELL ....... Assistant Professor (Psychology), 1977
B.A.; M.A.; Ph.D., University of Oregon, 1977
NELSEN, HARVEY W. Associate Professor (Interdisciplinary Social Science), 1972
B.A.; M.A.; Ph.D., George Washington University, 1972
NELSON, CARNOT E. ............ Professor (Psychology), 1971
B.S.; Ph.D., Columbia University, 1966
NELSON, DOUGLAS L. Professor — Program Director (Psychology), 1967
B.A.; M.A.; Ph.D., University of Wisconsin, 1967
NELSON, GID E., JR. ................ Professor (Biology), 1960
A.B., M.S., Ph.D., University of Florida, 1969
NELSON, LOUIS R. ......... Director (Laboratory Animal Medicine) Associate Professor (Medical Microbiology), 1971
B.S.; M.S.; D.V.M., Auburn University, 1955
NEMANN, EDGAR G. ........... Professor (Sociology), 1968
B.S.; M.S.; Ph.D., University of Florida, 1969
NEMANN, MARJORIE P. ....... Counselor/Adviser (Student Personnel Office, Education), 1969 (Part time)
NEMANN, MARJORIE P. ....... Counselor/Adviser (Student Personnel Office, Education), 1969 (Part time)
B.S., Michigan State University, 1952
NESS, GENE C. ............ Associate Professor (Biochemistry), 1974
B.S.; Ph.D., University of North Dakota, 1971
NESS, THOMAS E. Associate Professor — Chairperson (Marketing), 1971
A.B.; B.S.E.; M.S.I.A., Ph.D., Purdue University, 1968
NESTOR, EDWARD M. Regional Data Center Systems Programmer (Administration and Finance), 1968
NEUGAARD, EDWARD J. ....... Professor (Foreign Languages), 1964
B.A.; M.A.; Ph.D., University of North Carolina, 1964
NEVILLE, DONALD D. ....... Professor (Reading Education), 1972
B.S., M.Ed.; Ed.D., University of Florida, 1961
NEWCOMBE, P. JUDSON ....... Professor (Social Science and Letters Education), 1970
B.A.; M.A.; Ph.D., Northwestern University, 1963
NICHOLS, PATRICIA M. ....... Assistant in Research (Pediatrics), 1978
B.S.; M.S., University of Colorado Medical Center, 1978
NICKELS, BRADLEY J. ............ Associate Professor (Visual Arts), 1970
B.D.; M.A.; Ph.D., University of Indiana, 1966
NICKERSON, DEBORAH A. ....... Assistant Professor (Biology), 1979
B.A.; Ph.D., University of Tennessee, 1979
NICOLOSI, GREGORY R. Associate Professor (Physiology), Assistant Dean (Student Affairs, Medicine), 1972
B.S.; Ph.D., Ohio State University, 1971
NIEMI, DANIEL J. Area Administrator (Housing and Food Service, Student Affairs), 1980
B.S.; M.A., Central Michigan University, 1980
NIENHAUS, HARRY A. Associate Professor (Electrical Engineering), 1967
B.S., M.S., University of St. Louis, 1964
NIXON, ROBERT L. .......... Assistant Professor (Management), 1977
B.S.; M.S.; M.P.A., Ph.D., Cornell University, 1976
NOLAN, MICHAEL F. ....... Assistant Professor (Anatomy), 1975
B.S.; Ph.D., Medical College of Wisconsin, 1975
NOONAN, JOHN D. Assistant Professor (Ancient World Program), 1975
B.A.; M.A., Ph.D., Columbia University, 1973
NORD, HEINZ J. .... Associate Professor (Internal Medicine), 1973
B.S., M.D., University of Frankfurt and Freiburg Medical Schools, 1964
NORTHCUTT, TRAVIS J., JR. .... Dean — Professor (Social and Behavioral Sciences), 1972
B.S.; M.S.; Ph.D.; M.P.H., University of North Carolina, 1959
NORTON, BRYAN G. ......... Associate Professor (Humanities), New College of USF, 1975 Sarasota Campus
A.B., Ph.D., University of Michigan, 1970
NOYA, ROBERTO ....... Director (Admissions — New College), 1980 Sarasota Campus
B.A.; M.Ed., Harvard University, 1978
OBER, RICHARD L. Professor (Educational Leadership Education), 1969
B.S.; M.A.T.; Ph.D., Ohio State University, 1966
OEBBERHOFF, SIGNE W. Associate University Librarian (Libraries), 1974 St. Petersburg Campus
B.A.; M.L.S., Rutgers University, 1967
PAPPAS, GEORGE . . . . Professor — Chairperson (Visual Arts), 1966
B.S., M.A., Ed.D., Pennsylvania State University, 1957
PARADISI, LOIS J . Associate Professor (Medical Microbiology), 1973
A.B., M.S., Ph.D., University of Michigan, 1960
PARKER, JOHN W., JR . . Professor (English), 1963
B.A.; M.A.; Ed.D., University of Kentucky, 1956, Ed.S.
PARKER, KEITH A . . . . Associate Professor (History), 1966
B.A.; M.A., Ph.D., University of Maryland, 1965
PARRISH, JAMES A., JR . . Professor — Acting Program Director (English), 1960
B.S.; M.A., Ph.D., Florida State University, 1955
PARROTT, MARY E . . . Assistant Professor (Mathematics), 1979
B.S., M.S., Purdue University, 1965
PARROTT, WILLIAM H . Associate Professor (Accounting), 1976
B.A., M.Acc., Ph.D., University of Illinois, 1971
PASCOE, DIANE E . . . . . Lecturer (Visual Arts), 1977
B.S.; M.F.A., University of South Florida, 1976
PASSELL, NICHOLAS Assistant Professor (Natural Sciences), New College of USF, 1975 Sarasota Campus
B.A.; M.S., Ph.D., University of Chicago, 1969
PATTERSON, JAMES F . . Assistant in Research (Pathology), 1978
B.A., De Paul University, 1975
PATTERSON, GERALD E. Associate Professor (Adult and Vocational Education), 1971
B.S.; M.A., Ph.D., Ohio State University, 1970
PATTERSON, MICHAEL H. Director (University Physical Planning, Facilities Planning), 1973
B.A., University of Florida, 1969
PAVCO, SYNL M . Program Director (Project Thrust), 1980
PAULSON, DARRYL G. Associate Professor (Political Science), 1974
St. Petersburg Campus
B.A.; M.S., Ph.D., Florida State University, 1975
PEARCEY, WALTER E., JR . . Instructor (Childhood and Language Arts Education), 1970
B.A., M.A., University of South Florida, 1971
PENNER, LOUIS A . . . . . Program Director (Psychology), 1969
B.A., M.A.; Ph.D., Michigan State University, 1969
PEPPARD, VICTOR E . . . Associate Professor (Foreign Languages), 1975
B.A.; M.A.; Ph.D., University of Michigan, 1974
PERCHALSKI, JOHN E . . Assistant Professor — Program Director (Family Medicine), 1978
B.S.; M.D., University of Florida, 1967
Perez, Louis A., JR . . . . . . Professor (History), 1970
B.A.; M.A.; Ph.D., University of New Mexico, 1970
PERIN, WILLIAM H . Athletic Head Coach (Physical Education, Student Affairs), 1980
B.S.B.A., University of Florida, 1968
PERRY, I. DOUGLAS Associate Professor (Ophthalmology), 1976
B.S., M.S., M.D., University of Louisville, 1967
PERSKY, DAVID W . . Acting Assistant to Vice President (Student Affairs), 1979
B.A.; M.S., Ph.D., Florida State University, 1979
PETerson, DONOVAN D . Professor — Chairperson (Educational Leadership Education), 1968
B.S.; M.A.; Ph.D., University of Pittsburgh, 1970
PFEIFFER, ERIC A . . . . . . Professor — Director (Psychiatry), 1978
A.B., M.D., Washington University, 1960
PISHER, FRED C . . . . . . Associate Professor (Library, Media and Information Studies Education), 1976
B.S.; M.Ed.; A.M.L.S., Ph.D., University of Michigan, 1970
PITTS, H. PHILIP Associate Professor (Rehabilitation Education), 1967
B.A.; M.Ed.; Ed.D., George Peabody College, 1966
PHILPS, CHRISTOPHER P . . Assistant Professor (Anatomy), 1976
A.B.; Ph.D., Rutgers University, 1973
PHILLIPPS, STEVE W . . . . Associate in Education, 1974
B.A., M.B.A., University of South Florida, 1974
PHILLIPS, E. RAY . Professor — Chairperson (Math Education), 1968
B.S.; M.A.; Ph.D., Purdue University, 1971
PIERCE, CARMEL J. Counselor/Advisor (Student Personnel Advising, Education), 1970 St. Petersburg Campus
B.S., University of South Carolina, 1945
RODRI C K, RIT C HI E, ALEXANDER RITT E RMAN, ROG E RS, DON ALD W. Visiting Associate Professor (Civil Engineer-

RITCHIE, ALEXANDER W. ... Assistant Professor (Geology), 1978
B.S.: M.A., Ph.D., University of Texas, 1974
RITTERMAN, STUART I. ... Professor (Communicology), 1969
B.A.: Ph.D., Case Western Reserve University, 1968, C.C.C.
RIVARD, RICHARD J. ... Assistant Professor (Finance), 1977
B.S.: M.S., Ph.D., Texas A & M University, 1978
ROBERTS, LOREN G. ... Coordinator (Student Personnel Office, Education), 1968
B.S., M.S. Emporia State Teachers College, 1963
ROBERTS, ROBIN E. Athletic Coach (Physical Education, Student Affairs), 1976
B.S., Michigan State University, 1948
ROBERTSON, HENRY M. ... Professor (American Studies), 1961
B.A.: M.A., Ph.D., University of Minnesota, 1966
ROBERTSON, PHYLLIS M. Counselor/Advisor (Student Personnel Office, Education), 1968 (Part time)
B.A. University of Minnesota, 1941
ROBIN, CHEE H. ... Associate Professor (Dance), 1971
B.S., Florida State University, 1959
ROBINSON, GERALD G. ... Professor (Biology), 1960
B.S., Ph.D., University of Minnesota, 1960
ROBINSON, JACK H. ... Professor (Measurement and Research Education), 1963 St. Petersburg Campus
ROBINSON, JOHN O. ... Assistant Professor (Music), 1977
ROCHELLE, DAVID B. ... Director, University TV (Educational Resources), 1979
B.A., M.A., Ph.D., University of Oklahoma, 1971
RODRIGUEZ, MANUEL, JR. Business Manager (Medical Clinics), 1977
B.S., University of Tampa, 1968
ROGERS, DONALD W. Visiting Associate Professor (Civil Engineering and Mechanics), 1973 (Part time)
B.A.: M.S., Ph.D., University of North Carolina, 1973, P.E.
ROGERS, JOANNE L. Athletic Coach (Physical Education, Student Affairs), 1975
B.A.: M.A., University of South Florida, 1975
ROLF, CAROL J. Institutional Research Coordinator (Institutional Research), 1974
B.A. University of South Florida, 1976
ROMEO, JOHN T. ... Associate Professor (Biology), 1977
B.A.: M.S., Ph.D., University of Texas at Austin, 1973
ROMIG, LARRY G. ... Director (Lifelong Learning), 1966
B.S., M.A., University of South Florida, 1970
ROOT, ALLEN W. Professor — Associate Chairperson (Pediatrics), 1973
A.B.; M.D., Harvard Medical School, 1958
ROOT, EDWARD R. ... Assistant Professor (Pediatrics), 1978
B.A.: M.D., Albert Einstein College of Medicine, 1979
ROSENELLI, GEORGE Assistant Professor (Ophthalmology), 1980
B.A.: M.D., Georgetown University, 1975
ROSE, DONALD C. ... Professor (Mathematics), 1960
A.B.; M.A., Ph.D., University of Kentucky, 1954
ROSE, LEE H. Head Athletic Coach (Physical Education, Student Affairs), 1980
B.A., Transylvania, 1958
ROCHELLE, ALEXANDER W. ... Assistant Professor (Social Sciences), New College of USF, 1975 Sarasota Campus
B.A., M.A., Ph.D., Indiana University, 1971
ROSENZWEIG, ABRAHAM ... Professor (Geology), 1977
B.S.: Ph.D., Bryn Mawr College, 1930
ROSS, ANN M. ... Coordinator (Alumni and Development), 1980
B.A. University of South Florida, 1979
ROSS, NELSON E. Professor (Civil Engineering and Mechanics), 1965
B.S.M.E., M.S.A.E.; M.S.E.M., Ph.D., University of Florida, 1964, P.E.
ROSS, VIVIAN M. ... Associate Professor (Nursing), 1977
B.S.N., M.S.N.; Ed.D., Nova University, 1975
ROSS, WILLIAM T. ... Associate Professor — Program Director (English), 1970
B.A.: M.A., Ph.D., University of Virginia, 1970
ROUSE, MARYANNE M. Instructor (Accounting), Director (Professional and Management Development Center), 1971
B.A.: M.B.A., University of South Florida, 1974
ROUSH, S. LARRY ... Associate Professor (Management), 1978
B.A.: M.A., Harvard University, 1969
Sarasota Campus
B.S.; M.Ed.; Ph.D., University of Texas, 1958
ROWLEY, W. ... Professor — Chairperson (Economics), 1979
B.S., M.S., Ph.D., University of Illinois, 1966
RUBIN, STEVEN J. ... Associate Professor — Associate Chairperson (English), 1969
B.A.: M.A., Ph.D., University of Michigan, 1969
RUDUS, DEWEY J. ... Associate Professor (Psychology), 1972
B.S.; Ph.D., Stanford University, 1970
RUSH, JAMES A. ... Assistant Professor (Ophthalmology), 1979
A.B.: M.D., Georgetown University School of Medicine, 1972
RUSSEL, WILLIAM E. ... Associate Dean (Medical Clinics), Associate Professor (Pediatrics), 1979
B.S.; M.D., Wayne State University, 1952
RUTENBERG, DANIEL ... Professor (Humanities), 1964
A.B.; M.A., Ph.D., University of Florida, 1967
SABA, HUSSAIN I. ... Associate Professor (Internal Medicine), 1975
M.D.; Ph.D., University of North Carolina School of Medicine, 1970
SABA, SABINA ... Assistant Professor (Pathology), 1979
M.D., Darbhanga Medical College, India, 1963
SACCO, WILLIAM P. ... Assistant Professor (Psychology), 1979
B.A.: M.S., Ph.D., Florida State University, 1979
SACKETT, WILLIAM M. Professor — Chairperson (Marine Science), 1979 St. Petersburg Campus
A.B., Ph.D., Washington University, 1958
SADLORSKI, RONALD W. ... Assistant Professor (Surgery), 1976
B.S.; M.D., Indiana University School of Medicine, 1968
SAENZ, ARMANDO ... Associate Professor (Psychiatry), 1975
B.A.: M.D., University of Texas, Southwestern Medical School, 1963
SAFF, DONALD J. ... Professor (Visual Arts), 1965
SAFF, EDWARD B. ... Professor (Mathematics), 1969
B.S.; Ph.D., University of Maryland, 1968
SANDERS, THOMAS E. ... Associate Professor (English), 1968
B.A.: M.A., University of Denver, 1951
SANDERSON, ARTHUR M. Professor (Mass Communications), 1965
B.A.; M.A., Ph.D., University of Iowa, 1963
SANDLER, JACK ... Professor (Psychology), 1969
B.A.; M.S.; Ph.D., Florida State University, 1969
SANEY, ANNIE F. ... Counselor/Adviser (Project Thrust), 1980
B.A., Florida Memorial College, 1974
SAPORTA, SAMUEL ... Assistant Professor (Anatomy), 1977
B.A.: Ph.D., University of Southern California, 1973
SARACENO, CARMELO A. ... Assistant Professor (Surgery), 1978
B.S.; M.D., University of Maryland, 1973
SASMOR, JEANETTE L. ... Associate Professor (Nursing), 1979
B.S., M.Ed., Ed.D., Columbia University, 1974
SASSER, EMERY L. Professor — Chairperson (Mass Communications), 1973
A.B.; M.A.; Ph.D., University of Illinois, 1967
SATO, ATSUSHI Visiting Research Associate (Biochemistry), 1980
B.S.; M.S.; Ph.D., Tokushima University, 1979
SAXON, SUSAN V. Professor (Gerontology), 1963
B.S.; M.S., Ph.D., Florida State University, 1963
SCHELEMAN, HARRY J., JR. Associate Professor (Geography), 1969
St. Petersburg Campus
B.A.; M.A., University of Cincinnati, 1963
SCHATZ, DAVID R. Assistant Professor (Humanities), New College of USF, 1975 Sarasota Campus
B.A.: M.A., Harvard University, 1969
SLEEPER, DAVID C. . . . . Professor (Marketing), 1964
B.B.A., M.B.A.; Ph.D., Ohio State University, 1965
SMALL, NORMAN C. Professor (Civil Engineering and Mechanics), 1969
B.M.E.; M.M.E.; Ph.D., Brown University, 1960
SMITIE, DAVID Professor (Social Sciences), New College of USF, 1975 Sarasota Campus
B.A.; M.A.; Ph.D., Cornell University, 1953
SMITH, ALICE G. . . . . Professor (Library, Media and Information Studies Education), 1965
B.A., M.S.; Ed.D., Wayne State University, 1965
SMITH, CARLOS A. Associate Professor (Chemical Engineering), 1972
B.A.; M.S.; Ph.D., Louisiana State University, 1972
SMITH, CHARLES D. . . . . Professor (Physical Education, Education), 1967
B.A.; M.A.; Ed.D., Temple University, 1967
SMITH, CHARLES T. . . . . Associate Professor (Finance), 1968
SMITH, DAVID H. . . . . Dean — Professor (Arts and Letters), 1976
B.A.; M.A.; Ph.D., Ohio State University, 1965
SMITH, DONN L. Professor (Pharmacology and Comprehensive Medicine), 1969
B.A.; M.S.; M.D., University of Colorado, 1958
SMITH, ELTON E. . . . . Professor (English), 1961
B.A.; M.A.; B.D.; Ph.D., Syracuse University, 1961, D.D. (Hon.)
SMITH, JACK L. . . . . Professor (Accounting), 1969
B.B.A.; M.S.; Ph.D., University of Mississippi, 1969, C.P.A.
SMITH, JEROME . . . . Associate Professor (Anthropology), 1972
B.A.; M.A.; Ph.D., University of Arizona, 1972
SMITH, JOHN L., JR. Associate Professor — Coordinator (Music), 1972
B.M.E.; M.M.E.; D.M.A., University of Missouri, 1979
SMITH, JUEL H. University Counseling Psychologist (Counseling Center, Student Affairs), 1974
B.A.; M.A., University of South Florida, 1973
SMITH, PHILIP L. . . . . Associate Professor — Chairperson (Social Work), 1975
B.S.; M.S.W., University of Georgia, 1968
SMITH, ROBERT S. University Physician (Student Health Service, Student Affairs), 1980
B.A.; M.S.; M.E.; M.D., Medical College of Virginia, 1969
SMITH, WILLIAM A. Professor (Mechanical Engineering), 1966
B.S.M.E.; M.S., Ph.D., University of Florida, 1966
SMITZER, MELPOMEN . . . . Associate Professor (Exceptional Child Education), 1965
B.A.; M.A., University of Florida, 1957
SNIDER, ARTHUR D. Associate Professor (Mathematics), 1970
B.S.; M.A.; Ph.D., New York University, 1971
SNOOK, JANICE B. . . . . Associate Professor (Polical Science), 1968
A.B.; M.S.; Ph.D., University of Maryland, 1969
SNYDER, LEE D. Professor (Social Science), New College of USF, 1975 Sarasota Campus
B.A.; M.A.; M.Div.; Ph.D., Harvard University, 1966
SNYDER, ROBERT E. Assistant Professor (American Studies), 1980
B.S.; M.A.; Ph.D., Syracuse University, 1979
SOEGEMAN, WILLIAM A., JR. Professor — Chairperson (Comprehensive Medicine), 1975
B.A.; M.D., University of Pennsylvania, 1960
SOLOMON, DAVID A. Associate Professor (Internal Medicine), 1976
B.S., M.D., University of Maryland School of Medicine, 1969
SOLOMONS, T. W. GRAHAM . . . . Professor (Chemistry), 1960
B.S.; Ph.D., Duke University, 1959
SOLOMONSON, LARRY P. Associate Professor (Biochemistry), 1976
B.A.; Ph.D., University of Chicago, 1969
SOMMER, ADA M. Assistant Professor (Psychiatry), 1976 (Part time)
B.S.; M.A., University of Chicago, 1935
SPAIN, FRANK H. Director (Community College Relations), 1959
B.S., M.S.; Ed.D., University of Florida, 1954
SPARKS, AMY J. . . . . Associate Professor (Humanities), 1968
B.A., M.A.; Ph.D., Louisiana State University, 1964
SPAR, FRANK E. . . . . Director, Publications (University Relations), 1969
B.A.; M.A., University of Iowa, 1960
SPECTER, STEVEN C. Assistant Professor (Medical Microbiology), 1979
B.A., Ph.D., Temple University, 1975
SPENCE, JAMES G. . . . . Assistant Professor (Economics), 1975
B.S., M.A.; Ph.D., University of Oklahoma, 1979
SPIEGEL, PHILLIP G. . . . . Professor (Surgery), 1978
B.A., M.D., Northwestern University, 1960
SPIELBERGER, CHARLES D. . . . . Professor (Psychology), 1972
B.S.; B.A.; M.A.; Ph.D., University of Iowa, 1954
SPI LINE, JAMES R. . . . . Assistant Professor (Humanities), 1966
B.S.; M.A., University of Iowa, 1966
SPILLMAN, CAROLYN V. Visiting Assistant Professor (Childhood and Language Arts Education), 1977 Ft. Myers Campus
A.B.; M.Ed., Ph.D., University of North Carolina, 1972
SPROLES, H. ALLAN . . . . Associate Professor — Chairperson (Exceptional Child Education), 1971
B.S.; M.Ed., Ed.D., University of Georgia, 1973
STAFFORD, JOHN W. . . . . Assistant Professor (Geography), 1969
B.S., M.S.; M.A.; Ph.D., Michigan State University, 1971
STAGGS, KATHLEEN M. Visiting Assistant Professor (Humanities), New College of USF, 1980 Sarasota Campus
B.A.; M.A., Ph.D., Princeton University, 1979
STALNAKER, LEO, JR. . . . . Associate Professor — Director (Student Publications, Student Affairs), 1969
B.A.; M.A., University of South Florida, 1973
STANKO, JOSEPH A . . . . . . Associate Professor (Chemistry), 1973
B.S.; Ph.D., University of Illinois, 1966
STANTON, KENNETH D. Director (Instructional Media, Educational Resources), 1964
B.Des.; M.A., University of South Florida, 1968
STARK, WILLIAM R. . . . . Assistant Professor (Mathematics), 1978
B.S.; Ph.D., University of Wisconsin, 1975
STEELE, CHRISTOPHER L . . . . Assistant Professor (Theatre), 1979
B.A.; M.F.A., Southern Methodist University, 1979
STEIN, LESLIE R. Associate University Attorney (General Counsel), 1976
A.B.; M.A.; J.D., Stetson University College of Law, 1976
STEINER, H. EDWIN, JR. Associate Dean — Professor (Science and Health Education), 1969
B.A., M.D.; Ph.D., University of Texas, 1970
STEINHART, CORLEIN R. Research Associate (Internal Medicine), 1980
B.S., M.S., Bucknell University, 1970
STEINKE, GEORGE C. . . . . Associate Professor (Economics), 1970
B.S.; Ph.D., University of California, Berkeley, 1963
STEINMETZ, JOHN C. Assistant Professor (Marine Science), 1977 St. Petersburg Campus
B.S.; M.S.; Ph.D., University of Miami, Florida, 1977
STELZMAN, RAINULF A. . . . . Professor (Foreign Languages), 1963
DIP. I; DIP. II. Dr. Phil., University of Freiburg, 1953
STENMARK, DAVID E. . . . . Professor — Program Director (Clinical Psychology), 1977
B.A.; Ph.D., University of Alabama, 1969
STEVENS, LINDA J. Counselor to Students (Housing and Food Service, Student Affairs), 1979
B.A., M.Ed., University of Virginia, 1979
STEVENS, SARAH . . . . . . . Professor (Natural Sciences), New College of USF, 1975 Sarasota Campus
B.S.; Ph.D., University of Texas, 1953
STEVENS, WILLIAM L. . . . . Associate Professor (Accounting), 1971
B.S., M.Acc., D.B.A., Florida State University, 1971, C.P.A.
STERLING, ALAN L. Visiting Assistant Professor (Psychiatry), 1980
B.S., M.D., Ohio State University, 1972
STEVENS, BRIAN . . . . . . . Professor (Chemistry), 1967
B.A., M.A., Ph.D., D.Sc., Oxford University, England, 1977
STEVENS, DANA N. . . . . Associate Professor (Social Sciences), New College of USF, 1976 Sarasota Campus
B.A.; Ph.D., Stanford University, 1973
STEVENS, LARRY E. . . . . Director (Student Health Service, Student Affairs), 1971
B.S.; M.D., University of Kentucky, 1970
STEVENS, NOEL S. . . . . . . Associate Professor (Music), 1980
B.M., M.M., D.M.A., Eastman School of Music, 1959, Artist's Diploma
STEVENSON, WALTER D. Professor (Marketing), 1968
A.B.; Ph.D., Harvard University, 1956

STEARNS, MARK T. Assistant Professor (Geology), 1976
A.B.; M.S., M.S., Ph.D., University of Wisconsin, 1976

STEWART, HAMILTON W. Lecturer (Management), 1971 St. Petersburg Campus
B.S.: M.B.A., Rutgers University, 1968

STEWART, STEWART B. A.; M.A.; M.D., University of California, 1969

STEWART, SWARTZ, ZEK, SWIRI. Counselor/Advisor (University Studies, Student Affairs), 1977
B.S.: M.A.; M.S., Syracuse University, 1976

STONE, CAROLYN L. Counselor/Advisor (Project Thrust, Academic Affairs), 1979
B.A., M.A., University of South Florida, 1976

STONE, DOUGLAS E. Professor (Measurement and Research Education), 1964
B.A.; M.A., Ph.D., University of Chicago, 1969

STONE, LEO D. Lecturer (Finance), 1974 St. Petersburg Campus
B.A.; M.B.A., Indiana University, 1975

STONE, RICHARD N. Assistant Professor (Geology), 1977
A.B.; M.D., Indiana University, 1976

STOHER, DEWEY M., Jr. Associate Professor (Geography), 1967
B.A.; M.A.; Ed.D., Duke University, 1961

STRANGE, JAMES F. Professor — Acting Chairperson (Religious Studies), 1972
B.A.; M. Div.; Ph.D., Drew University, 1970

STRAHALL, DENISE D. Data Base Coordinator (Institutional Research), 1970
B.A.; M.A., University of South Florida, 1969

STROM, RICHARD N. Assistant Professor (Geology), 1977
B.S.; M.S., Ph.D., University of Delaware, 1975

STRONG, PASCHAL, N. Professor (Psychology), 1966
A.B.; Ph.D., University of Tennessee, 1955

STRONG, SALLIE J. Associate Professor (English), 1963
B.A., M.A., Ph.D., University of Florida, 1971

SUMMER, AVERILL V. Assistant Professor (Music), 1973 (Part time)
B.A.; M.M., D.Mus., Indiana University, 1979

SUMMER, ROBERT J., III Associate Professor (Music Arts), 1973
B.S.; M.M., D.Mus., Indiana University, 1978

SURAWICZ, FRITZ, G. Professor (Psychiatry), 1980
M.D., University of Munich, Germany, 1943

SUTTON, CARL H. Professor (Surgery), 1980
A.B.; M.D., Indiana University Medical School, 1980

SWANSON, JAMES M. Associate Professor (History), 1964
B.A.; M.A.; Ph.D., Indiana University, 1968

SWARTZ, WILLIAM E., JR. Associate Professor (Chemistry), 1972
B.S.; Ph.D., Massachusetts Institute of Technology, 1971

SWEENEY, VIRGINIA Assistant Director — Instructor (Sponsored Research), 1965
B.A.; M.Ed., Columbia University, 1960

SWEIGAN, DONALD B. Director (University Development), 1980
B.A.; M.A.; Ed.D., Pennsylvania State University, 1957

SWIERCZEK, FREDRIC W. Assistant Professor (Political Science), 1977
B.A.; Ph.D., University of Pittsburgh, 1978

SWHART, STEWART L. Professor — Chairperson (Biology), 1970
B.A.; M.S., Ph.D., Lehigh University, 1964

SYDOR, ELIZABETH E. Lecturer (Dance), 1980
B.A.; M.Ed.; M.A., Columbia University, 1980

SZMITT ANDRON, ANDRZA Dean (Medicine) — Chairperson (Pharmacology and Therapeutics), 1970
M.D., University Medical School, Debrecen, Hungary, 1950

TAHSOFF, SUE Instructor (History), 1978
B.A.; M.A., University of Virginia, 1974

TALLIS, JOAN E. Area Administrator (Housing and Food Service, Student Affairs), 1963
B.S.; M.S.Ed., Syracuse University, 1963

TAMPA, RAYMOND V. Counselor/Advisor (Project Thrust, Academic Affairs), 1979
B.A.; M.S., Nova University, 1978

TAR, ZOLTAI Assistant Professor (Social Sciences), New College of Florida, 1980 Sarasota Campus
B.A., M.A., Ph.D., University of Illinois, 1974

TATUM, JIM C. Associate Professor (Foreign Languages), 1963
B.A.; M.A., Ph.D., Tulane University, 1968

TAYLOR, CHARLES D. Assistant Professor (Internal Medicine), 1978
A.B.; M.D., Emory University School of Medicine, 1972

TAYLOR, PHYLLIS M. Associate University Librarian (Libraries), 1980
B.A.; M.S.L.S., Atlanta University School of Library and Information Studies, 1984

TAYLOR, RICHARD N. Assistant Professor (Philosophy), 1969
B.A.; B.D.; M. Phil., Yale University, 1969

TAYLOR, SPAFFORD C. Associate Professor (Physical Education, Student Affairs), 1963
B.S.; M.A.; Ph.D., University of Chicago, 1968

Tedesco, Thomas A. George Peabody College, 1960

TERRITTO, LEONARD Associate Professor (Criminal Justice), 1978
B.A.; M.A.; Ed.D., Nova University, 1975

THAXTER, JEFFREY D. Counselor to Students (Housing and Food Service, Student Affairs), 1979
B.A.; M.A., University of Vermont, 1973

THEILEKER, ERNEST A. Associate Professor (Mathematics), 1970
B.S.; M.S.; Ph.D., University of Chicago, 1968

TOMLINSON, D. Systems Coordinator (Computer Research Center), 1968
B.S.; M.B.A., Rollins College, 1967

TOMLINSON, GENE R. Professor (Reading Education), 1969
B.Ed. State University of New York, Brockport, 1951

THOMPSON, ROBERT B. Counselor/Advisor (Business Administration), 1976
B.A. University of South Florida, 1976

THOMPSON, SHERMAN Associate Professor (Adult and Vocational Education), 1966
B.A.; M.A., Florida State University, 1976

THORNBERRY, PATRICIA L. Department Head — Associate University Librarian (Libraries), 1979
B.A.; M.A.; M.S., George Peabody College for Teachers, 1973

THORNTON, JOHN J. Professor (Surgery), 1970
B.S.; M.S., University of South Carolina, 1973

THOMAS, KELVIN M. Visiting Counselor/Advisor (Counseling Center, Student Affairs), 1980 (Part time)
M.S.W., Florida State University, 1967

TILLMANN, JAMES S. Associate University Librarian (Medical Center Library), 1972
B.A.; M.L.S., Emory University, 1970

TIPPS, K. G. Assistant Professor (History), 1969
B.A.; M.A.; Ph.D., University of Colorado, 1971

TOCCO, THOMAS Associate Professor (Measurement and Research Education), 1970

TOGUE, DAVID, Jr. Lecturer (Mass Communications), 1978
B.A., University of Maryland, 1970

TOYNG, JOSEPH M. Executive Director, Alumni Affairs (University Relations), 1967
B.A.; M.A., University of South Florida, 1976

TORTora, MAE Associate Professor (Ophthalmology), 1975
B.S.; M.D., Marquette School of Medicine, 1969

TORRES, JOSEPH J. Assistant Professor (Marine Science), 1980
B.S.; M.A.; Ph.D., University of California at Santa Barbara, 1980

TOWERY, GENE M. Associate Professor (Reading Education), 1970
St. Petersburg Campus
B.S.; M.S.Ed., Ed.D., Florida State University, 1971

TOWERY, HENRY H. Associate Professor (Marketing), 1970
B.S.; M.B.; D.B.A., Florida State University, 1969

TRAJAN, ROGER R. Professor (Interdisciplinary Social Science), 1973
A.B.; M.A., Ph.D., Pennsylvania State University, 1959
TREMML, WILLIAM C. …… Professor — Chairperson (Religious Studies), 1969

A.B.: Th.M., Th.D., Iliff School of Theology, 1950

TRICE, ISAAC Assistant Professor (Physical Education, Student Affairs), 1970

B.S.: M.S. University of Colorado, 1961

TROUTMAN, ANDRIA M. …… Professor (Math Education), 1971


TRUITT, WILLIS H. Professor — Chairperson (Philosophy), 1968

A.B.: A.M., Ph.D., Boston University, 1968

TSERPES, NICHOLAS A. …… Professor (Mathematics), 1968

B.A.: M.A., Ph.D., Wayne State University, 1968

TSOKOS, CHRISTOS P. …… Professor (Mathematics), 1972

B.S.: M.S.: Ph.D., University of Connecticut, 1968

TSOKOS, JANICE O. …… Associate Professor (Chemistry), 1972

B.S.: Ph.D., University of Rhode Island, 1969

TURBEVILLE, JOSEPH E., JR. …… Lecturer (Physics), 1964

B.A.: University of South Florida, 1963

TURNER, STEPHEN P. …… Associate Professor (Sociology), 1975 St. Petersburg Campus

A.B., A.M., A.M., Ph.D., University of Missouri, 1975

TUTLE, ESTER W., JR. …… Professor (Psychology and Social Foundations Education), 1964


TWIGG, JOHN F. …… Associate Professor (Engineering), 1964

B.S.: M.A., Boston University, 1949

TYNER, JOHN L., JR. …… University Physician (Student Health Service, Student Affairs), 1972 (Part time)

B.S.: M.D., Medical School of South Carolina, 1965

UNRUH, ANITA …… Associate Professor (Art and Music Education), 1968

B.S.: M.A. University of Illinois, 1959

UPCHURCH, SAM B. …… Associate Professor (Geology), 1974

A.B.: M.S. Ph.D., Northwestern University, 1970

UPRICHARD, WILLIAM A. …… Professor (Mathematics), 1971

B.S.: M.S.; M.A.: Ph.D., University of Akron, 1969

URAVICH, PAUL A. …… Director (Student Safety and Security), 1973

B.S., M.S., Florida State University, 1970

URBANEK, RAYMOND A. …… Professor (Measurement and Research Education), 1961


VALENTINE, VIRGINIA W. …… Lecturer (English), 1968

B.A.: M.A., Southern Methodist University, 1951

VALEN TINE, VIRGINIA W. …… Lecturer (English), 1968

B.A.: M.A., Southern Methodist University, 1951

VAN DER VEN, JAN H. …… Associate Professor (Social Sciences), New College of USF, 1977 Sarasota Campus

B.A., B.M.A.: Ph.D., Cornell University, 1973

VAN NESTE, ROY J. …… Assistant Professor (History), 1971

B.A.: M.A., Ph.D., University of Wisconsin, 1972

VAN VLEET, EDWARD S. …… Assistant Professor (Marine Science), 1979

St. Petersburg Campus

B.S., B.A.: M.S.: Ph.D., University of Rhode Island, 1978

VAN VOORHIS, KENNETH R. …… Associate Professor (Management), 1970

B.S., M.B.A., D.B.A., Louisiana State University, 1971

VAN VOORST, STEVEN J. …… Assistant Professor (Surgery), 1979

B.S.: M.D., Indiana University School of Medicine, 1972

VANDEN, HARRY E. …… Associate Professor (Political Science), 1975


VANDOR, SANDOR L. …… Assistant Professor (Chemistry), 1977

B.S.: M.S.: Ph.D., Ohio State University, 1967

VARGAS, ALFONSO …… Assistant Professor (Pediatrics), 1979

M.D.: Universidad Nacional De Colombia School of Medicine, 1972

VARGO, GABRIEL A. …… Assistant Professor (Marine Science), 1979 St. Petersburg Campus

B.S., M.S.: Ph.D., University of Rhode Island, 1976

VASEY, FRANK B. …… Assistant Professor (Internal Medicine), 1977


VASTINE, JAMES P. …… Assistant Department Head — University Librarian (Libraries), 1970

B.A.: M.S.L.S., Florida State University, 1965

VEGA, MANUEL …… Associate Professor (Criminal Justice), 1965

Sarasota Campus

B.S., M.S., Ph.D., Florida State University, 1964

VERKAUF, BARRY S. …… Associate Professor (Obstetrics and Gynecology), 1974 (Part time)

B.A.: M.D., Tulane University School of Medicine, 1965

VESPERS, MARIA D. …… Visiting Assistant Professor (Anthropology), 1978

B.A.: M.A., Ph.D., Princeton University, 1978

VETER, HAROLD J. …… Professor — Chairperson (Criminal Justice), 1974

B.A., M.A., Ph.D., State University of New York at Buffalo, 1955

VILLEME, CHARLES …… Program Director (Student Personnel) — Associate Professor (Educational Leadership Education), 1971


VLACEVSL, JOCELYN …… Assistant Professor (Management), 1977


VINCENT, ALBERT L. …… Assistant Professor (Comprehensive Medicine), 1978

A.B., M.A.: Ph.D., University of California, Los Angeles, 1976

VINCENT D. ASHLEY …… Associate Professor (Chemical Engineering), 1976

B.S.G.E.: M.A.: Ph.D., University of Virginia, 1974

VOGEL, DENIS E. …… Assistant Professor (Mass Communications), 1979

A.B.: M.A.: Ph.D., Florida State University, 1979

WAGNER, BONNIE …… Counselor/Adviser (Student Personnel Office Education), 1970 (Part time)

B.A., M.A.: University of South Florida, 1975

WALBOLT, DANIEL R. …… Vice President (Student Affairs), 1969

B.S., J.D., New York University, 1965

WALDEN, ERIC L. …… University Comptroller (Finance and Accounting), 1973

B.S.; M.B.A., East Texas State University, 1973

WALLACE, ROBERT E. …… Acting Director (University Personnel Relations), 1972

B.A., University of Akron, 1961

WALSH, RUTH M. …… Associate Professor (Management), 1969

A.B.; M.A.: Ph.D., University of South Florida, 1976

WALTER, JOHN D. …… Assistant Professor (English), 1965

B.A., M.A.: Ph.D., Vanderbilt University, 1972

WALTZ, ALFRED J. …… Instructor (Management), 1979

B.S.; M.S., Georgia Institute of Technology, 1972

WAMBOLDT, CONSTANCE …… Assistant Director (Intercollegiate Athletics, Student Affairs), 1978

B.A., M.A.: Ph.D., Ohio State University, 1977

WANG, TING-YUE  …… Assistant Professor (Pathology), 1978

M.D., National Defense Medical Center, Taiwan, 1971

WARD, ANNE Professor (Measurement and Research Education), 1972

B.S.Ed., M.S.Ed., Ph.D., University of Tennessee, 1958

WARFIELD, NANCY R. …… Assistant Professor (Music Arts), 1980

B.M., Oberlin Conservatory, 1977

WARNER, JOSEPH S., IV …… Director (Environmental Health and Safety), 1976

B.S., M.A., California State University, Los Angeles, 1975

WARREN, JOHN R. …… Assistant Professor (Family Medicine), 1978

A.B., M.D., Indiana University School of Medicine, 1969

WATERMAN, PATRICIA P. …… Assistant Professor (Anthropology), 1969

B.S., M.A.: Ph.D., University of California, Berkeley, 1978

WATKINS, ARMIN J. …… Professor (Music Arts), 1960


WATKINS, GEORGE M. …… Professor — Associate Chairperson (Surgery), 1975

B.A.: M.D., Vanderbilt University School of Medicine, 1960

WEATHERFORD, ROY C. …… Associate Professor (Philosophy), 1972

B.A.; M.A.: Ph.D., Harvard University, 1972

WEAVER, JANICE E. …… Assistant Professor (Economics), 1976

B.A.; M.A., Ph.D., University of Illinois, 1976

WEAVER, LEE A. …… Professor (Industrial and Management Systems Engineering), 1967

B.A.; M.S., Ph.D., University of Florida, 1972

WEBB, SYDNEY J. …… Professor (Physics), 1973


WEBER, DONALD O. …… Assistant Professor (Surgery), 1978

B.S.; M.D., University of Michigan Medical School, 1971
WEBER, LEE A. Assistant Professor (Biology), 1977
B.A.; M.S., Ph.D., University of Connecticut, 1970
WEBSTER, DAVID R. Visiting Assistant Professor (Accounting), 1979
B.A.; M.P.A.; J.D., Duke University School of Law, 1979
WEEKS, GERALD M. Associate Professor (Math Education), 1970
St. Petersburg Campus
B.S.; M.Ed., Ed.D., University of Georgia, 1970
WEBNER, HERMAN. Associate Professor (Physical Education, Education), 1970
B.S.; M.A.; Ed.D., Temple University, 1969
WEINGARTNER, CHARLES. Professor (Psychological and Social Foundations Education), 1970
B.S.; M.A.; Ed.D., Columbia University, 1938
WEINZIEL, JON. Associate Professor (Chemistry), 1979
B.A.; M.S., M.D., Brown University, 1969
WELKER, ROBERT F. Associate Professor (Accounting/Business Law), 1969
B.S., M.S., Florida State University, 1961, C.P.A.
WEST, WILLIAM W. Professor (Social Science and Letters Education), 1970
B.A.; M.A.; Ph.D., Syracuse University, 1965
WHEELER, JOSEPH C. Assistant Professor (Surgery), 1980
M.D., University of South Florida, 1974
WHEELER, RAYMOND H. Professor (Sociology), 1965
B.S.; M.A.; Ph.D., University of Michigan, 1962
WHEELER, WILLIAM. Assistant Professor (Psychology), 1974
B.A.; Ph.D., University of California, Irvine, 1974
WHITAKER, ROBERT D. Professor (Chemistry), 1962
B.S.; Ph.D., University of Florida, 1959
WHITE, CHESTER. Affirmative Action Officer (Equal Opportunity), 1980
B.A.; J.D., Howard University School of Law, 1979
WHITE, MICHAEL J. Assistant Professor (Management), 1968
B.E.E.; M.B.A.; Ph.D., University of Florida, 1972
WHITE, ROBERT L. Visiting Assistant Professor (Social Work), 1978
A.B.; M.S.W., University of North Carolina, 1963
WHITMAN, ANNE. Acting Associate Director (Veterans Affairs, Student Affairs), 1978
B.A., University of South Florida, 1978
WHITNEY, VERNON W. Associate Professor (Social Science and Letters Education), 1966
WHITTAKER, GEORGE. Professor (Accounting), 1978
St. Petersburg Campus
B.A.; M.A.: M.B.A.; Ph.D., Northwestern University, 1974
WIEAND, KENNETH F. Associate Professor (Finance), 1980
B.S.; M.A., Ph.D., Washington University in St. Louis, 1970
WINKER, CURTIS W. Associate Professor (Anthropology), 1972
B.A.; M.A.; Ph.D., University of Arizona, 1975
WIGGINS, JAY R. Associate Professor (Pharmacology), 1976
B.S.; Ph.D., Columbia University, 1975
WILK, ROGER E. Professor (Educational Measurement and Research), 1972
B.S.; M.A., Ph.D., University of Minnesota, 1957
WILLIAMS, CAROL A. Associate Professor (Mathematics), 1968
B.A.; Ph.D., Yale University, 1967
WILLIAMS, CHARLES C. Assistant Professor (Internal Medicine), 1980
B.S.; M.D., University of Pittsburgh, 1973
WILLIAMS, DAVID K. Instructor (Theatre Arts), 1975
B.A.; University of South Florida, 1973
WILLIAMS, JAMES R. Associate Professor (Anthropology), 1969
B.S.; M.A., Ph.D., Missouri University, 1971
WILLIAMS, JOSEPH F. Associate Professor (Pharmacology — Therapeutics), 1972
B.A.; Ph.D., University of Utah, 1970
WILLIAMS, JUANITA H. Professor (Interdisciplinary Social Science), 1966
A.B.; M.A.; Ph.D., Temple University, 1963
WILLOUGHBY, ARTHUR. Professor (Biology), 1978
B.S.; M.S., M.D., Brown University, 1969
WILSON, MARILYN. Assistant Professor (Psychiatry), 1979
B.S.; Ph.D., University of Missouri, 1979
WILSON, ROBERT M. Assistant Professor (Economics), 1978
B.A.; M.A., Ph.D., Northwestern University, 1977
WILSON, THOMAS C. Associate Professor (Research), 1979
B.S.; M.A.; Ed.D., Nova University, 1979
WILSON, GEORGE. Professor (Chemistry), 1970
B.A.; M.S., M.P.A.; J.D., Duke University, 1970
WILLETT, COL. Professor (Social Science and Letters Education), 1966
B.S.; M.A.; M.B.A., Ph.D., Duke University, 1974
WILLETT, ROBERT E. Professor (Radiology), 1970
B.A.; M.A., Ph.D., Duke University, 1973
WILLIAMS, MARVIN. Professor (Industrial and Management Systems Engineering), 1964
B.S.; M.E.; M.S.E., Ph.D., Purdue University, 1957
WINCH, ANNABELLE M. Assistant to Vice President (Student Health Service, Student Affairs), 1960
B.A., M.A., University of South Florida, 1969, R.N.
WISE, DANIEL E. Visiting Instructor (Marketing), 1980
B.A.; M.B.A., University of South Florida, 1980
WISEMAN, DUANNE L. Coordinator (Development/Alumni Affairs, University Relations), 1979
A.B., Hiram College, 1962
WITK, JOSEPH T. Assistant Professor (Radiology), 1980
B.A.; M.S., M.D., St. Louis University, 1968
WOLFF, ALVIN W. Professor (Anthropology), 1974
B.A.; Ph.D., Northwestern University, 1957
WOODFORD, ARTHUR N. Associate Professor (Music Arts), 1972
B.S., M.M., University of Idaho, 1955
WOOLFENDEN, GLEN E. Professor (Biology), 1969
B.S.; M.A.; Ph.D., University of Florida, 1960
WORRELL, JAY H. Professor (Chemistry), 1967
B.S.; M.S.; Ph.D., Ohio State University, 1968
WRIGHT, D. R. EDward Assistant Professor (Visual Arts), 1980
B.A.; M.F.A., Ph.D., Princeton University, 1976
WRIGHT, CHARLES J. Lecturer (History), 1970
B.A.; M.A.; Ph.D., Brown University, 1968
WUICIK, THEODORE F. Associate Professor (Visual Arts), 1979
B.S.; M.A.; Ph.D., Ohio State University, 1973
Columbia University, 1972
YARNCKO, BERNIENGOD. Assistant Professor (Internal Medicine), 1979
B.S.; M.S.; M.D.; M.D., Far Eastern University, 1970
YARNOK, MICHAEL D. Associate Professor (Surgery), 1977
B.S.; M.D., Navarra Medical School, Pamplona, Spain, 1963
YARNOK, MICHAEL D. Associate Professor (Surgery), 1977
B.S.; M.D., Navarra Medical School, Pamplona, Spain, 1963
| Academic Advising, 16, 29 | Anthropology, 146 courses, 255 |
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| Administration and Supervision, 87 | Audiovisual education, see Library, Media & Information Studies |
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| Admissions               | Audiology, see Communicology |
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| Admission to: College of Arts & Letters, 54 | Bicycles, on campus, 23 |
| College of Business Administration, 65 | Biology, 127 courses, 241 |
| College of Education, 74 | Board of Education (State), 279 |
| College of Engineering, 101 | Board of Regents, 279 |
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